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MEDICAL BOTANY.

VOL. I.

MEDICAL BOTANY;

OR,

ILLUSTRATIONS AND DESCRIPTIONS

OF THE

Medicinal Plants

OF THE LONDON, EDINBURGH, AND DUBLIN PHARMACOPŒIAS

COMPRISING

A POPULAR AND SCIENTIFIC ACCOUNT OF

POISONOUS VEGETABLES

INDIGENOUS TO GREAT BRITAIN.

BY JOHN STEPHENSON, M.D. F.L.S.
GRADUATE OF THE UNIVERSITY OF EDINBURGH;

AND

JAMES MORSS CHURCHILL, F.L.S.
MEMBER OF THE ROYAL COLLEGE OF SURGEONS AND FELLOW OF THE MEDICO-BOTANICAL SOCIETY OF LONDON.

NEW EDITION.

EDITED BY

GILBERT T. BURNETT, F.L.S.
&c. &c.
PROFESSOR OF BOTANY IN KING'S COLLEGE, LONDON, AND PRESIDENT OF THE WESTMINSTER MEDICAL SOCIETY.

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TO

HIS MOST EXCELLENT MAJESTY,

KING WILLIAM THE FOURTH,

THE

MUNIFICENT PATRON OF THE ARTS AND SCIENCES,

THIS WORK

ON

MEDICAL BOTANY,

ILLUSTRATIVE OF THE NATIONAL PHARMACOPŒIAS,

IS,

With his Majesty's Gracious Permission,

VERY HUMBLY INSCRIBED,

BY

HIS MAJESTY'S

MOST LOYAL AND DEVOTED SERVANTS,

THE AUTHORS.

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ATROPA BELLADONNA.

Deadly Nightshade.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. LURIDÆ, *Lin.* SOLANEÆ, *Juss.*
SOLANACEÆ, *De Cand.* SOLANACEÆ, SOLANEÆ, *Burn.*

GEN. CHAR. *Corolla* bell-shaped. *Stamens* distant, incurved. *Berry* globular, 2-celled. *Seeds* many, reniform.

SPEC. CHAR. *Stem* herbaceous. *Leaves* ovate, entire.

Syn.—Belladonna, *Raii. Syn.* 265; *Mill. Ic. t.* 62.
Solanum maniacum, solanum furiosum, *Olim.*
Solanum lethale, *Ger. Em.* 340; *Park.* 346; *Clus. Hist. p.* 86.
Solanum Melanoceros, *Bauh. Pin.* 166.
Solanum somniferum, *Buch. Hist. Scotica. l.* vii. *c.* vi.
Belladonna, trichotoma, *Scop. Carn.* 1. *p.* 160; *Moench. Meth.* 179.
Atropa lethalis, *Salisb. Prodr.* 132.
Atropa Belladonna, *Lin. Sp. Pl.* 260; *Willd v.* 1. 1017; *Fl. Brit.* 255; *Eng. Bot. v.* 9. *t.* 592; *Curt. Lond. fasc.* 5. *t.* 16; *Wood. Med. Bot. t.* 1; *Scot.* 78; *Stoke's Bot. Mat. Med.* 1. 394.

PROVINCIALLY.—*Dwale, Deadly Dwale, Black-cherry Nightshade.*

FOREIGN.—*Belladone vulgaire,* Fr.; *Belladonna,* Ital.; *Bella-Donna, bella-die gemeine Wolfskirsche, Tollkraut,* Ger.; *Belladonna Skönheden, Besiedraagend Doodkruid,* Dut.; *Beschenaja wischnja* Russ.

DWALE, or Deadly Nightshade, termed in the Pharmacopœias, Belladonna, is a native of the south of Europe, Austria, and England; and has long been cultivated in our gardens. It is a perennial plant, flowering in June and July; and ripening its berries in September. It grows in many parts of Britain, on a calcareous soil; but is scarce. It is generally found in shady lanes, and hedges; in the neighbourhood of villages, and ancient ruins. Belladonna is rarely met with in the neighbourhood of London; but we learn on the authority of Dr. Milne and others, that it grows in the greatest abundance at Cuxstone, near Rochester, in Kent; also at Wisbeach, in the isle of Ely; in that part of the south-east of Lincolnshire, which is called

Holland, near Royston, in Hertfordshire; in Windsor Park; about Box-hill, near Dorking, in Surrey; and very luxuriantly amongst the ruins of Furness Abbey, in consequence of which, the valley is called the Vale of Nightshade. It was observed by Mr. Neill on Inchcolm, and among the ruins of Borthwick Castle, near Edinburgh.*

Belladonna rises to the height of three or four feet, from a root, which is thick, fleshy, creeping, and much branched. The stem is erect, cylindrical, herbaceous, annual, branching, and generally covered with short hairs. The branches are dichotomous, tinged with purple, and crowded with leaves; which are lateral, ovate, entire, somewhat soft, pointed at both ends, of a dull green colour, and grow in pairs, of unequal size, on short petioles. The flowers are solitary, somewhat drooping, and supported on rather short, one-flowered, axillary peduncles; the calyx (*a*) is green, persistent, and deeply divided into five ovate segments; the corolla, gamopetalous, bell-shaped, with five marginal segments, of a lurid purple externally, within paler, dusky, with a yellowish variegated base; and contains five stamens (*b*) shorter than the corolla, arched, and supporting cordate, four-lobed anthers; with a nectariferous gland beneath a spheroidal germen, bearing a long simple style (*c*), and a two-lobed stigma (*d*). The fruit (*e*) is a two-celled berry, the size of a small cherry, seated within the calyx; it is depressed with a transverse furrow, shining, smooth, of a deep violet black colour, and inclosing, within its pulp, a number of kidney-shaped seeds. (*f*)

Atropa is said to be derived from Atropos, one of the evil Destinies, (Ἄτροπος from α and τρέπω,) as indicative of the inevitable fate of such as become subject to its influence. Belladonna, in the Italian language, signifies a beautiful woman; and was bestowed on this plant, in consequence of the ladies using its fruit in the composition of their *fucus*, or face-paint. These names, however, were not given until it was ascertained that it did not belong to the genus Solanum.

Qualities.—The leaves of Belladonna have scarcely any smell, but a slightly nauseous, sub-acrid taste. When dried,

* Greville's *Flora Edinensis*, p. 53.

and carefully excluded from air and moisture, they retain their active properties for a long time. The juice of the ripe berries has a sweetish taste, and, according to Withering, it stains paper of a beautiful and durable purple.

Chemical Properties.—From the recent discoveries of *Brandes*, the active properties of Belladonna appear to reside in a salifiable base, termed *Atropia*, or *Atropine*, and on it the poisonous qualities of the plant depend.* To obtain this principle, M. Brandes boiled two pounds of the dried leaves of the Atropa *Belladonna* in a sufficient quantity of water, pressed out the decoction, and boiled the leaves again in some more water. The decoctions were mixed, and some sulphuric acid was added in order to throw down the albumen, and similar bodies; the solution was thus rendered thinner, and passed more readily through the filter. The decoction was next super-saturated with potass; by which he obtained a precipitate, weighing, after having been washed with pure water, and dried, 89 grains. It consisted of small crystals, from which, by solution in acids, and precipitation by alkalies, *Atropine* was obtained in a state of purity.† Or, *Atropine* may be obtained by digesting the decoction of the herb of the Atropa *Belladonna* with magnesia; boiling the precipitate in alcohol, and filtering: the *Atropine* crystallizes, on cooling, in needles, or colourless translucent prisms.‡

As it exists naturally in the plant, Atropine is combined with an acid, which prevents its rising in vapour during distillation with water; but M. Brandes has subsequently found, that if previously macerated with an alkali, then this proximate principle passes over with the water, and may be collected in the receiver. In a state of purity, it is a thick, transparent, colourless liquid, which soon becomes yellowish, and gradually darker and darker, on exposure to the air.‖

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* The Atropa *Belladonna* yields on analysis the following constituents: wax 0.7; resinous chlorophylle 5.84; acid malate of *atropine* 1.51; gum 8.03; fecula 1.25; woody fibre 13.7; phyteumacolle 6.9; a matter analogous to osmazome, with malate of atropine, oxalate, hydrochlorate, and sulphate of potass 16.05; soluble albumen 4.7; hard albumen 6; ammoniacal salts and acetates, malate of *atropine*, oxalate, malate, sulphate, hydrochlorate, and nitrate of potass; oxalate, malate, (?) and phosphate of lime, and phosphate of magnesia 7.47; water 25.8; loss 2.05. The ashes contain oxyde of copper.—*Brandes* and *Vauquelin*.

† Ure's *Chemical Dictionary*, art. *Atropia*.

‡ *Chimie Organique*, par Leopold Gmelin: edition de Virey. p. 398.

‖ Kuhn's Annalen der Pharm.

Properties of Atropine.—Atropine, as stated by *Brandes*, varies in appearance, according to the method by which it is obtained. It crystallizes only, when rendered perfectly pure, by repeated solution in muriatic acid; and precipitation by ammonia. It is readily soluble in ether, and much more so in hot, than cold alcohol; almost insoluble in water; and entirely so in the oils. It forms with acids, neutral crystallizable salts.

In the anhydrous state, Atropine does not affect the test-papers; but if put on reddened litmus after the paper has been moistened, it restores the blue tint. With water it forms a hydrate, which is less volatile than pure Atropine, (although it vaporizes but slowly;) still its action is by far the most energetic, as M. Brandes proved by experiments on birds.*

Action of Atropine on the Animal Economy.—When M. Brandes was experimenting on this alkali, he was obliged to desist, in consequence of the violent head-aches, pains in the back, and giddiness, with frequent nausea, which the vapour of the salt occasioned: it had, indeed, so injurious an effect upon his health, that he for a long time entirely abstained from further experiments, and no one has hitherto repeated them. He once tasted a small quantity of the sulphate of Atropine; it was merely saline. He was quickly attacked with violent head-ache, shaking in the limbs, alternate sensations of heat and cold, oppression of the chest, difficulty of breathing, and diminished circulation of the blood. The violence of these symptoms ceased in half an hour. The vapour, even of the various salts of Atropine, produces vertigo. When exposed for a long time to the vapours from a solution of nitrate, phosphate, or sulphate of Atropine, the pupil of the eye becomes dilated. This occurred frequently to M. Brandes; and when he tasted the salt of Atropine, the dilatation followed to so great a degree, that it continued for twelve hours, and was not influenced by the different shades of light, which were thrown on the eye.† M. Brandes reports, that "when three drops of hydrate of Atropine were given to a bird, the respiration immediately became difficult, it opened

* Kuhn's Annalen der Pharm.

† *Schweigger's Journal*, 28. 1; *Repert. de Buchaner*, ix. 71; *Ure's Chemical Dictionary*; *Formulary of several new Remedies*, by T. Haden, fol. 119.

its beak, detruded its tongue, ruffled its feathers, and dropped its wings; the pupils became dilated, the head drawn back by spasms, and profound apathy ensued. In ten minutes nausea supervened, and a thick yellowish fluid being evacuated, it gradually recovered. In another experiment, when six drops were administered, all the before-mentioned symptoms occurred, but in a more intense degree, and in thirty minutes the bird was dead. The autopsy shewed that there had been great determination of blood to the head; the lungs were gorged with dark blood, and that in the heart and cavæ was nearly black. A clot was discovered in the diploe, and two in the spinal column, undoubtedly the results of the poison." M. Runge has ascertained that alkaline solutions completely destroy the properties of Atropine, or, at least, affect it so much that it loses the power of causing dilatation of the pupil; he also found that lime-water produces the same effect.

Poisonous Effects of Belladonna.—Dr. Paris, in his Synoptical Table of Poisons, remarks, that Belladonna is one of the narcotico-acrid class, which not only exerts a local action, but poisons by entering the circulation: and thereby acting through that medium, with different degrees of energy on the heart, brain, and alimentary canal. When taken in an overdose, it produces symptoms of intoxication,—a fact too obvious to have escaped the penetrating genius of Shakspeare, for in the speech of Banquo to Macbeth, we read,

> " Or have we eaten of the insane root,
> That takes the reason prisoner ?"—

Dryness of the mouth, thirst, trembling of the tongue, vertigo, sickness, and difficulty of deglutition, with great anxiety about the precordia, ensue; the pulse becomes low and feeble; the face swollen, and red; the pupils dilated; the jaws fixed; vision impaired; and these symptoms terminate in convulsions, coma, paralysis, and death.

Above a hundred and fifty soldiers were poisoned by the berries of Belladonna which they gathered at Pirna, near Dresden: and the following are the symptoms, as copied from Orfila, and enumerated in the *Journal de Sedillot*,

December, 1813, by M. E. Gautier de Claubry. Dilatation and immobility of the pupil; insensibility, almost complete, of the eye to the presence of external objects; or at least confused vision: injection of the conjunctiva by bluish blood; protrusion of the eye, which in some appeared as if it were dull, and in others ardent, and furious; dryness of the lips, tongue, palate, and throat; difficult deglutition, or total incapacity to swallow; nausea unattended by vomiting; sense of weakness, lipothymia, syncope; frequent bending forward of the trunk; continual motion of the hands, and fingers; gay delirium, with a vacant smile; aphonia, or confused sounds uttered with pain; apparently ineffectual desires to evacuate the bowels, insensible restoration to health and reason, without any recollection of the preceding state.

M. Koestler, of Vienna, has recorded in an interesting memoir, the phenomena which presented themselves in five persons of different ages, who, ignorant of their deleterious properties, had eaten, more or less freely, of the berries of this deadly plant. It appears from his account, that a man with his son, aged nine years, walking one afternoon in the woods near Dornbach, and seeing the branches of Belladonna bearing black and brilliant fruit, resembling wild cherries, gathered some for his son, who ate them freely on account of their sweetish taste; the man also ate ten berries, and carried home a large quantity for his other children; a younger son, not quite five years old, ate a great number; two elder daughters ate less. All went to bed afterwards apparently well. Towards morning the two boys were restless, and soon became delirious. M. Koestler saw them about 10 A. M., and learned that a little while after eating the berries, the father drank some new and sourish white wine; during the evening he vomited, and had several alvine evacuations. In the morning, he suffered only from a slight headache, accompanied with a little stupor, and from time to time some griping in the bowels. The youngest of his daughters, who had eaten fewest of the berries, and who had vomited during the night, complained of pain in the head, and dimness of sight; but the pupils were not much dilated. The other daughter, who was older, had eaten more, and she had not vomited as her

sister had; she therefore presented much more alarming symptoms: viz. violent head-ache, with stupor, vision indistinct, pupils very much dilated, walk unsteady and tottering, vertigo, stomach and bowels torpid, *pulse regular*, tongue clean, and occasionally slight eructations tainted with the smell of Belladonna. In the two boys, the effects of the poison appeared in full force by restlessness, and attempts to escape, so that they were with difficulty confined to their beds, continual motions of the hands and fingers, and desire to lay hold of the coverlets, or other objects within their reach, or to thrust their fingers into their nostrils; delirium acute, but the wanderings only on lively subjects; actual vision almost gone; but at the same time both the boys fancied they beheld a crowd of objects; extreme dilation and insensibility of the pupils; the eye-balls alternately fixed and rolling; spasmodic actions of the muscles of the face, grinding of the teeth, yawning, &c.; voice hoarse and weak; slight swelling of the left side of the throat, and burning sensation in the œsophagus, (in the eldest of the two boys,) *decided aversion to all liquids in both, and spasmodic attacks whenever they were forced to swallow* anything; lastly, great excitement of the genitals, and involuntary passing of urine. On the whole the symptoms presented (as will be seen) some analogy to *mania without fever;* for the vascular system was neither locally nor generally excited, and the respiration was not sensibly disturbed.

Emetics of ipecacuan and tartarized antimony were administered to the eldest daughter, and the two boys, the father, and youngest daughter, having previously vomited, took as antidotes the vegetable acids, as also did the other daughter after the operation of the emetic; under which treatment, they all three quickly recovered.

The two boys, however, did not vomit until they had taken ℈ iv. of ipecacuan, and gr. x. of emetic tartar: the eldest then brought up many seeds, and much pulp of the Belladonna, mixed with bile and mucus; the youngest, who had eaten more, and whose stomach was more torpid, discharged less. As swallowing was extremely painful, they had clysters of vinegar and water administered every hour, and vinegar lotions were assiduously applied to the head, and along the spinal column. By

these means the agitation diminished considerably; nevertheless the youngest slept but little during the night, and both the boys were delirious the following day, although in a less degree. They passed many fetid evacuations from the bowels, in which the remains of Belladonna berries were perceived. On the morrow they were well, with the exception of a slight dimness of sight, and a feeling of tightness in the neck of the eldest.

These cases afford many data as to the mode in which Belladonna acts; they show that the berries of this vegetable affect the central nervous system exclusively; and that they probably possess a purely narcotic power, while the leaves and the roots contain, as it is said, something more acrid and exciting. By its effects on the organs of deglutition, the fruit of the Belladonna shows some similarity to the hydrophobic poison; it likewise equally presents certain analogies with the (miasmatic or other) principle of typhus fever.

These phenomena are curious, and as M. Koestler observes, some further therapeutical experiments should be made with Belladonna berries (distinct from the leaves or roots) as they seem to promise to afford a soothing narcotic medicine, which would not excite any febrile action.—(*Medicinische Jahrbücher.*)

That the poisonous properties of this plant have long been known appears certain, for Buchanan, the Scottish historian, states that the Danes were treacherously defeated by the troops of Macbeth, who, during a truce, sent bread, and a mixture of wine and ale, to Sweno, containing poison: and from the subjoined passage it will be seen that the botanical description of the plant proves it to have been Belladonna.

"Missa magna vis panis et vini,* tum e vite, tum ex hordeo confecti, ac succo infecti † herbæ cujusdam veneficæ, cujus magna copia passim in Scotia nascitur. Vulgo solanum ‡ somniferum vocant. Caulis ei major bipedali in ramos superne diffunditur: folia latiuscula acuminata exteriore parte, ac languide virentia, acini § prægrandes, ac nigri, cum maturuerunt, coloris, qui e caule, sub axilla foliorum exeunt; sapor eis dulcis et propemodum fatuus. Semen habent perexiguum velut fici grana, vis

* Wine and ale. † Poisonous herbs. ‡ Nightshade. § Berries.

fructui, radici, ac maxime semini somnifera, et quæ in amentiam si largius sumantur, agat. Hac herba cum omnia infecta essent, qui commeatus in castra vehebant, ne qua doli subesset suspicio prægustabant, Danosque magnis poculis invitabant ad bibendum. Idem quoque Sueno ipse benevolentiæ significandæ causa, ut illis nationibus mos est, faciebat."—*Rerum Scoticarum Hist.* lib. vii. cap. 6. p. 162.

When MARK ANTONY, the triumvir, was engaged in the Parthian war, his troops became greatly distressed for provisions, and Belladonna is supposed to be the plant referred to by Plutarch in the following passage:—

"Those who sought for herbs, and pot-herbs, obtained few that they had been accustomed to eat, and in tasting unknown herbs, they found one that brought on madness and death. He that had eaten of it, immediately lost all memory, and knowledge; but at the same time would busy himself in turning and moving every stone he met with, as if he was upon some very important pursuit. The camp was full of unhappy men, bending to the ground; and thus digging up, and removing stones, till at last they were carried off by a bilious vomiting, when wine, the only remedy, was not to be found."

MORBID APPEARANCES.—Upon examining the bodies of those who have died from the effects of Belladonna, it is found that they soon putrefy; swell remarkably, and are covered with livid spots: blood flows from the mouth, nose, and eyes; and the stench is intolerable. If the berries have been taken, they are found to be but partially digested, owing to the extreme torpor of the stomach, produced by them: and the blood is in a dissolved state. Ulcers are likewise to be found, occasionally, on the internal surface of the stomach. The heart and lungs appear livid, and the latter are usually gorged with venous blood, and studded with black spots. In one case, the pericardium contained no serum.

When the quantity of the plant found in the stomach is sufficient, we may proceed to identify it by obtaining Atropine, as recommended by Dr. Paris. Dr. Runces, of Berlin, proposes a new method; which consists in boiling the stomach, or intestines of the animal poisoned, and evaporating the aqueous solution, to

the consistence of an extract; and applying it with a camel-hair pencil to the eye of an animal, by which dilatation of the pupil is produced. He prefers a cat for the experiment, the shape of its pupil affording the best opportunity for witnessing the phenomenon.

Treatment of Poisoning by Belladonna.—A patient labouring under the effects of this poison should have his head and shoulders raised nearly to the erect position, and pressure from the neck removed. If the extract, or a solution of it, has been taken, the stomach-pump may be advantageously employed. The berries, however, are generally the cause of mischief; and the sulphate of zinc, or copper, must be administered in small and repeated doses, to excite vomiting; but we should be careful that no great accumulation of these agents takes place, or inflammation may be produced. Haller says that the torpidity of the stomach, which Belladonna occasions, is so extreme, that he has known fourteen grains of emetic tartar to be taken with scarcely any effect. Should the stupor be very alarming, we must unload the vessels of the brain by bleeding from the jugular vein, and by cold effusions: whereby the torpor of the stomach may be relieved, and the action of the emetic frequently induced. Stimuli may likewise be applied to the eye, or the nose; frictions to the regions of the heart; and sinapisms to the feet. After the stomach has been evacuated of its contents, the vegetable acids, especially *vinegar*, diluents, and saline purgatives, must be administered.

Medical Properties and Uses.—The poisonous qualities of Belladonna reside in every part of the plant; but chiefly predominate in the fruit: and we possess but too many well-attested narratives of the fatal effect of its berries, which in appearance are very alluring to children. They are said, however, to be less pernicious than the leaves; and although one, or even half of one, has produced death, Haller informs us that he has seen a fellow-student, eat three, or four, with impunity. To the most active of the vegetable kingdom, we naturally look for valuable remedial agents; and Belladonna is one which has been frequently administered: but its great power renders it an in-

tractable medicine; and we generally have recourse to it when unsuccessful by other means. It possesses anodyne and antispasmodic virtues; in small doses relieving pain; and it has a direct action on the brain and nervous system: but in larger doses, according to Dr. Bostock, it exerts its influence on the alimentary canal. Like Digitalis, Nicotiana, and various other narcotics, it sometimes operates as a diuretic; and in a few rare instances, has been known to excite the action of the salivary glands, and to produce salivation.*

Gesner, in his medical epistles, recommends a syrup made with the expressed juice of the berries, to be given in *dysentery*, in every case where opium is indicated, and speaks of its efficacy. Cases of its successful use in chorea, epilepsy, and convulsions, are recorded. Asthma, paralysis, pertussis, neuralgia-facialis, chronic rheumatism, and the pain attendant on scirrhus, sometimes yield to its influence; but in mania and hydrophobia, it has been most indiscriminately used, and consequently with various results. From its diminishing the velocity of the pulse, it has been given to persons the subjects of aneurism. The *Archives Generales* for 1823 contains a long article on the employment of Belladonna as a prophylactic in scarlatina.† Dr. Hufeland assures us, on the authority of several of the most eminent practitioners in Germany, that this plant has been found, on experiment, to render persons insusceptible of the infection of the fever, in places where it may be raging.

As a topical remedy, the powder, and decoction, have been successfully applied to cancerous, and ill-conditioned painful sores: and we have found sciatica, lumbago, the pain of venereal nodes, and anomalous muscular pains, readily yield to the influence of its extract, when used as a plaster. By some, a bougie armed with it has been applied to spasmodic strictures; and if rubbed on the under surface of the urethra in similar cases, it will often afford relief, and likewise alleviate the pain of

* See *Greeding apud Ludwigii Adversar. Medico-Pract.* vol. i. part 4. and vol. ii. part 2.

† See *Lancet*, vol. i. p. 403.

the consistence of an extract; and applying it with a camel-hair pencil to the eye of an animal, by which dilatation of the pupil is produced. He prefers a cat for the experiment, the shape of its pupil affording the best opportunity for witnessing the phenomenon.

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Medical Properties and Uses.—The poisonous qualities of Belladonna reside in every part of the plant; but chiefly predominate in the fruit: and we possess but too many well-attested narratives of the fatal effect of its berries, which in appearance are very alluring to children. They are said, however, to be less pernicious than the leaves; and although one, or even half of one, has produced death, Haller informs us that he has seen a fellow-student, eat three, or four, with impunity. To the most active of the vegetable kingdom, we naturally look for valuable remedial agents; and Belladonna is one which has been frequently administered: but its great power renders it an in-

tractable medicine; and we generally have recourse to it when unsuccessful by other means. It possesses anodyne and antispasmodic virtues; in small doses relieving pain; and it has a direct action on the brain and nervous system: but in larger doses, according to Dr. Bostock, it exerts its influence on the alimentary canal. Like Digitalis, Nicotiana, and various other narcotics, it sometimes operates as a diuretic; and in a few rare instances, has been known to excite the action of the salivary glands, and to produce salivation.*

Gesner, in his medical epistles, recommends a syrup made with the expressed juice of the berries, to be given in *dysentery*, in every case where opium is indicated, and speaks of its efficacy. Cases of its successful use in chorea, epilepsy, and convulsions, are recorded. Asthma, paralysis, pertussis, neuralgia-facialis, chronic rheumatism, and the pain attendant on scirrhus, sometimes yield to its influence; but in mania and hydrophobia, it has been most indiscriminately used, and consequently with various results. From its diminishing the velocity of the pulse, it has been given to persons the subjects of aneurism. The *Archives Generales* for 1823 contains a long article on the employment of Belladonna as a prophylactic in scarlatina.† Dr. Hufeland assures us, on the authority of several of the most eminent practitioners in Germany, that this plant has been found, on experiment, to render persons insusceptible of the infection of the fever, in places where it may be raging.

As a topical remedy, the powder, and decoction, have been successfully applied to cancerous, and ill-conditioned painful sores: and we have found sciatica, lumbago, the pain of venereal nodes, and anomalous muscular pains, readily yield to the influence of its extract, when used as a plaster. By some, a bougie armed with it has been applied to spasmodic strictures; and if rubbed on the under surface of the urethra in similar cases, it will often afford relief, and likewise alleviate the pain of

* See *Greeding apud Ludwigii Adversar. Medico-Pract.* vol. i. part 4. and vol. ii. part 2.

† See *Lancet*, vol. i. p. 403.

chordee; but even here its great power cannot be easily controlled; as in some instances the muscles of the perinæum and penis have been so paralysed for a time that the urine has flowed away involuntarily.

From its acting on the fibres of the iris, whereby dilatation of the pupil is produced, some dissolved extract is applied to the *brow*, or some infusion dropped into the eye, prior to the operation for cataract:—"A practice," says Dr. Murray, in his Materia Medica, "which is hazardous, as the pupil, though much dilated by the application, instantly contracts when the instrument is introduced." It is also applied externally after the operation, to prevent the edge of the iris from becoming adherent to the edges of the torn capsule; and in like manner, when adhesive matter is deposited on the iris through inflammation. And as its effects endure for many hours, the rays of light are extensively admitted on the retina, so that persons suffering from incipient cataract, enjoy from its use a considerable, though temporary, improvement of vision.

Dr. Ley, an eminent accoucheur in London, has been in the habit of using this medicine, in the form of injection, in cancer and ulceration of the womb, and in leucorrhœa, with great success: and Dr. Conquest writes—"In a few of those perplexing and wearisome cases of protracted labour, arising from rigidity of the os and cervix uteri, and which often harass both patient and practitioner through successive nights and days, I have seen decided benefit result from the introduction of about half a dram of the *Extractum Belladonnæ*, by gently rubbing it about the mouth, and neck of the womb. It has suspended unproductive uterine action, and produced relaxation of parts, so that on the recurrence of expulsatory pains the os uteri has readily yielded, and permitted the head to pass."

During puerperal convulsions, M. Chaussier has been constantly in the habit, since the year 1811, of applying an ointment to the uterus, composed of two drachms of the extract of Belladonna, and six of simple cerate; and many other French practitioners have also used it with benefit. Mr. Blackett, however, has recorded a case, in which the os uteri became so paralyzed, as to threaten very serious consequences for several hours: a cir-

cumstance which renders it very questionable how far we are justified in producing a condition of parts, from which uncontrollable uterine hæmorrhage might ensue.

PREPARATIONS.—The *officinal* preparations of Belladonna are the Extr. Belladonnæ *Lond.*, and the Succ. Spiss. Atrop. Bellad. of the Edin. Phar., made of the expressed juice inspissated.

Mr. Blackett, in an Essay on the use of Atropa *Belladonna*, says, " The particular preparation of this medicine, which I have been in the habit of using, is a very strong tincture, made from the extract in the following proportions: Take ten drachms of the most carefully prepared extract of the Belladonna, and one pound of proof spirit, macerate for fourteen days, and then filter. I endeavour to procure the extract in a state of its greatest activity, and possessing the virtues of the plants undiminished in the preparation; and I consequently find a single drop of the tincture which is made from it, to be more efficacious than a quarter-of-a-grain dose of the extract, as it is usually obtained from druggists.

" I have frequently employed this tincture in cases of mania, in various instances of convulsions, in hysteria, and in pertussis, with decided efficacy. In all cases of its internal use, I have commenced with small doses, generally with two or three minims in a day. I have been led to embrace this cautious mode of commencing the remedy, because I have found that when given, at first in a large dose, owing to peculiar states of the constitution, especially in old subjects, it sometimes depresses the powers of life to a greater extent than was wished. In several forms of cutaneous and superficial inflammation, I have experienced the greatest service from the external use of this tincture, either when added to a lotion, or to any ointment, which appeared most suitable, in other respects, to the particular nature of the case. When I have employed it in a lotion, a drachm of the tincture, to eight ounces of the liquid, has been the proportion adopted: and in this form I have found it very beneficial in external inflammation, and in irritable ulcers. I have used the extract either alone, or combined with some ointment, with decided advantage, in spasmodic stricture of the rectum; and I have found it useful in gonorrhæa, especially when chordee was present, conjoined with double the quantity of mercurial ointment, and rubbed along the course of the urethra."

Empl. Hydrarg. et Belladonnæ.

℞. Ung. Hydrargyri fort. ℥j.
Gummi Ammoniaci ʒvj.
Extracti Belladonnæ ʒiv.
Acidi Hydrocyanici ʒß.

Reduce the gum ammoniacum to a fine powder, and with the extract, and a little water, form a thick mass. Then rub with them the mercurial ointment and prussic acid (previously mixed) so as to form a uniform mass. This composition, thickly spread on leather, is highly useful as a topical application to scirrhous and scrofulous tumours.—*New Medico-Chirurgical Pharmacopœia.*

A plaster composed of one part of carbonate of ammonia to three of extract of Belladonna, and spread on soft leather, is an excellent combination, for painful muscular affections.

We have also known that distressing malady schirrus of the pylorus, to be much relieved by the external application of the extract of Belladonna, in the form of plaster.

Dose.—The dose is from one to five grains of the dried leaves, or of the extract, which may be gradually increased.

Convolvulus sepium.

II.

CONVOLVULUS SEPIUM.

Great Bindweed.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. CAMPANACEÆ, *Lin.* CONVOLVULI, *Juss.* CONVOLVULACEÆ, *Decand.* CONVOLVULACEÆ, CONVOLVULEÆ, *Burn.*

GEN. CHAR. *Corolla* bell-shaped, plaited. *Stigmas* two, obtuse. *Capsule* 1-celled, containing two seeds.

SPEC. CHAR. *Leaves* sagittate, notched, or truncated at the base. *Peduncles* 4-angled, supporting a single flower. *Bracteas* cordate, close to the flower.

Syn.—Convolvulus major, *Raii. Syn.* 275; *Bauh. Hist. v.* 2. 154, *f.*
Convolvulus major albus, *Park.* 163.
Calystegia sepium, R. Brown, *Prodr. Fl. Nov. Holl.* 483.
Convolvulus, n. 663, *Hall. Hist. v.* 1. 295.
Smilax lenis, sive lævis, major, *Ger. Em.* 861, *f.*; *Dod. Pempt.* 392, *f.*
Smilax lævis, *Matth. Valgr. v.* 2. 552, *f.*; *Camer. Epit.* 932, *f.*
Convolvulus sepium, *Lin. Sp. Pl.* 218; *Willd. v.* 844; *Fl. Brit.* 233; *Eng. Bot. v.* 5. *t.* 313; *Hook. Scot.* 74.

PROVINCIALLY.—*Hedge Bindweed, Withe-wind, Hedge-bells.*

FOREIGN.—*Le grand Liseron*, Fr.; *Viluchio maggiore*, Ital.; *Zaunwinde*, Ger.

THIS species separated by Brown from Convolvulus, and called by him Calystegia, is a perennial plant, growing in woods, and moist hedges, in England, and other parts of Europe, America, and Peru. Nearly all the hedge-rows in the vicinity of London abound with it; and it is from this characteristic habit that it obtains its trivial appellation. It produces its large, elegant, bell-shaped flowers, in July, and August. In Scotland it is comparatively rare. It was found by Dr. Yule near Edinburgh in a hedge by the road-side, leading from Abbey-hill to

Leith, and by Dr. Hooker, it is mentioned as occurring in plenty about Dumbarton; and on the north bank of the Clyde, four miles below Glasgow.

This plant climbs like a vine, sending up, from a long, slender, white, fibrous root, several smooth, weak, angular twisted stems; which entwine themselves around any support: and frequently extend to the length of ten or twelve feet. The leaves are large, arrow-shaped, smooth, variously truncated at the base, of a light green colour, placed alternately, and supported on longish foot-stalks. The flowers are solitary, on smooth, square peduncles, that proceed singly from the axillæ of the leaves; each bearing a very large, monopetalous, bell-shaped, plaited, and obsoletely five-lobed snow-white flower. The calyx (*a*) is composed of five oval, obtuse, very small pale-green leaves, that endure till the fruit be ripe. At the base of the calyx are placed two heart-shaped *bracteas* (*b*), large, pointed, slightly keeled, and tinged with reddish-purple on the edges. The anthers (*c*) are arrow-shaped, and compressed, on slender awl-shaped filaments, shorter than the corolla. The germen (*d*) is ovate; the style (*e*) is filiform, of the length of the stamens (*f*); and there are two spreading stigmas. (*g*) The fruit is a globular, pointed, one-celled capsule, composed of two or three valves, and containing two roundish seeds, of a chocolate colour.

PROPERTIES AND USES.---All the species of this extensive genus, or nearly so, possess purgative properties in a greater or less degree; and to it we are indebted for those valuable articles of the materia medica, scammony, and jalap. Most writers have ascribed similar virtues to the Convolvulus *sepium*; and others have ranked it amongst our indigenous poisons; but having instituted a series of experiments, we have ascertained that an extract may be obtained from its roots, possessing simply a cathartic power.

Twenty pounds of the recent root, yielded a watery extract of one pound twelve ounces, from fifteen to twenty grains of which, act freely on the bowels, as a drastic purgative, and gripe but little. A pill, composed of one ounce and a half of the extract, two drachms of aloes, and one drachm of ginger, acts with certainty and ease, in doses of ten grains; and might be substituted, in most cases, for the compound extract of colocynth, where economy is required. Haller affirms that the expressed juice of the herb, taken in the quantity of twenty or thirty grains, possesses the virtues of scammony;* hence it is sometimes called German scammony; and is recommended by Dr. Mason Good as a hydragogue purgative in dropsies. Haller (Op. Cit.) likewise remarks, "Cataplasma cum oleo ad tumorem in genu dissipandum imposuit. Canem decoctum non purgavit."

Besides the Convolvulus *sepium*, there are two other species of this genus, natives of Britain, viz. *C. arvensis*, and *C. soldanella*, both of which we have found to possess cathartic powers; but in an inferior degree. The former has, indeed, been ranked among the acrid poisons, upon the most vague and unsatisfactory authority.

* Haller *Stirp. Indig. Helv.* tom. 2, p. 295.

III

LOLIUM TEMULENTUM.

Bearded Darnel.

Class III. TRIANDRIA.—*Order* II. DIGYNIA.

Nat. Ord. GRAMINA, *Lin.* GRAMINEÆ, *Juss.*
GRAMINEÆ, *Decand.* HORDEACEÆ, *Kunth.*
GRAMINEÆ, HORDEACEÆ, *Burn.*

GEN. CHAR. *Glume* of one valve, fixed or permanent, inclosing several flowers.

SPEC. CHAR. *Spike* awned. *Spikelets* compressed, shorter than the glume. *Florets* elliptical, of equal length with the rigid awn. *Root* annual.

Syn.—Lolium album, *Raii. Syn.* 385, 1; *Ger. Em.* 78; *Park.* 1145.
Lolium, n. 1420, *Hall. Hist. v.* 2. 205.
Lolium album, *Ger. Em.* 78, *f.*; *Raii. Syn.* 395.
Crachalia temulentu, *Schranc. Fl. Bat.* 255.
Bromus temulentus, *Bern. Erford*, 419.
Lolium temulentum, *Lin. Sp. Pl.* 122; *Willd. v.* 1. 462; *Stokes, v.* 3. 161; *Fl. Brit.* 150; *Eng. Bot. v.* 16. *t.* 1164; *Hook. Scot.* 45; *Host. Gram. v. v.* 1. 20. *t.* 26.

PROVINCIALLY.—*Intoxicating Darnel*; *Annual Rye-grass*; *White Darnel*; *Annual Darnel-grass. Droke*, Yorksh.; *Sturdy*, Ireland; *Drill*, Isle of Thanet.

FOREIGN.—*Ivraie* or *Ivroie*, Fr.; *Loglio*, Ital.; *Jährige Loch. Germaine Loch, Somme h, Schussgrass*, Ger.; *Joyo, Zizania*, Span.; *Heyre, Heyregrass*, Dan.;

THIS is one of the rarer British grasses. It has been generally regarded as not unfrequent in many parts of England; and yet we had never been able to meet with it, excepting once in Battersea fields, till during the last summer, when on a visit at Mersea island; it was pointed out to us as growing amongst wheat, on a farm at East Mersea, and on another at Peldon. Dr. Bouè, of Geneva, in his Inaugural Thesis, published at Edinburgh in 1817, enumerates it amongst the scarce plants of Scotland.* Dr. Hooker, in his *Flora Scotica*, informs us, that it is occasionally found in the neighbourhood of Glasgow. It is an

* *Floram Regionis cujusdam conducendi, p.* 12.

annual, growing spontaneously in corn-fields among wheat, barley, and flax; and flowering in July.

The culm or stalk is rough in the upper part, erect, cylindrical, striated, three or four feet high, and clothed at the joints, which are from three to five in number, with linear pointed leaves, a foot or more in length, rough on the upper surface, but smooth below, and of a pale green colour. The sheaths are roughish, striated, and crowned with a short, blunt ligula, slightly notched at the edge. The inflorescence is an erect spike, frequently a foot or more in length. The spikelets are erect, sessile, disposed in two rows, alternately along the rachis or common receptacle, each containing many flowers. The single valve of the glume is the length of the spikelet, awl-shaped, and without any awn; the terminal flower of each spikelet, and frequently the lower ones, are furnished with a minute elliptical inner valve. The glumelle consists of two unequal valves; the outer only half the length of the glume; it is edged with white, and puts forth below the tip a straight awn, twice its own length. The filaments are three; capillary, shorter than the glumelle, and supporting oblong anthers, cloven at each end. The germen is turbinate; styles two, very short; stigmas feathery along the upper side. The seeds are solitary, elliptical, convex on one side, compressed, and attached to the inner valve of the glumelle. In some specimens the awns are very short, or altogether wanting. Lolium *arvense* is very nearly allied to this species, but differs in having the spikelets mostly destitute of awns, and the spicule and calyx of equal length. *Fig.* (*a*) spikelet; (*b*) under glume; (*c*) floret; (*d*) germen, and styles.

This is the only species of the extensive natural order, Gramina, that is known to possess deleterious qualities. It is the αἶρα of Dioscorides, of Theophrastus, and Galen; the Zizania, or Zinzania, of the Arabians: and is generally met with in corn-fields, especially amongst wheat, where to a bad farmer it proves a troublesome and noxious weed. As such it is referred to by Ovid:—

> ———" Lolium, tribuliqne fatigant
> Triticeas messes, et inexpugnabile gramen."
> *Orid. Met.* lib. v. v. 485.

And in allusion to this, it has been supposed that the term Lollard was given as a reproach to a religious sect, which arose in

Germany about the beginning of the fourteenth century :* and also to the followers of Wickliffe in our country, who were considered by the enemies of the Reformation, as pernicious weeds in Christ's vineyard, choking and destroying the pure wheat of the gospel.

Virgil, in his Georgics, (lib i. v. 154,) refers to the plant :—

> ——— "interque nitentia culta
> Infelix lolium et steriles dominantur avenæ."

And again, in his fifth Eclogue, (v. 36.)

> "Grandia sæpe quibus mandavimus hordea sulcis
> Infelix lolium, et steriles dominantur avenæ."

The late Professor Martyn, in his notes to Virgil, remarks, that the word "*dominantur*" is very proper, "for these weeds grow so tall that they overtop the corn.

"Being an annual plant, (remarks Mr. Sinclair, in his Hortus Gramineus Wobernensis,) it may be easily kept under, or totally extirpated, by the practice of the drill mode of husbandry."

The generic name, Lolium, appears to be derived from the Greek, λᾶιον ὀλεῖν, hurtful or poisonous grain, as indicative of its deleterious qualities; some derive it from λᾶιον ὀλοὸν, as being injurious to the crops, and others from δολιος, *deceitful, base, counterfeit*, an opinion having prevailed amongst the ancients, that several species of the noxious weeds which infest corn-fields, are only cereal grains, in a degraded, or corrupted state. Wild, or barren oat, the Ægilops of Pliny, they conceived to be a degenerated oat, and darnel, in like manner, to be an inferior kind of wheat, or barley. Thus Plautus—

> "Mirum est *lolio* victitare te, tam vili *tritico*."†

And so prevalent was this idea even during the last century, that Linnæus wrote a dissertation expressly to refute it. "It seems highly probable," says Milne, "that in translating the Greek Ζιζάνια, which occurs in the 13th chapter of St. Matthew's Gospel, darnel would have better conveyed the meaning than *Tares*." And

* Since this article was written, we entertain some doubts as to the correctness of this passage, for on perusing the Eclectic Review for December, we find that in an animated conversation which took place between a Waldensian clergyman, and the Rev. W. Gilly, A.M. Rector of Fambridge, Essex, the former asks, "Whence came your term *Lollards*, but from a Waldensian pastor, *Walter Lollard*, who flourished about the middle of the thirteenth century?"

† *Miles Gloriosus*: act ii. sc. iii. v. 50.

in accordance and with this view of the subject, the French always translate it Ivraie, (ivroie,) from *enivrer*, to render drunk.

Qualities.—The seeds are inodorous, and have a slight bitterish, disagreeable taste. They are said to redden the blue colour of vegetables; but their chemical properties and composition have not hitherto been ascertained.

Poisonous Effects and Morbid Appearances.—Haller * states, that this species of Lolium possesses intoxicating effects, as its trivial name *temulentum* implies; and whether baked into bread, or fermented in ale, it is attended by very disagreeable, and even fatal effects. It produces headache, vertigo, vomiting, lethargy, drunkenness, difficulty of speech; and the tongue exhibits a very strong trembling: while Seeger remarks, that a trembling of the body is one of the most certain signs of poisoning by this plant. It also affects with blindness for several hours, and is thus commemorated by Ovid in his Fasti: †

> " Et careant loliis oculos vitiantibus agri
> Nec sterilis culto surgat avena solo."

And this property has given rise to the proverb, " He feeds on Darnel," which refers to a dim-sighted person: thus Plautus, in the scene referred to above, where Palæstro inquiring what Sceledrus meant by his living on darnel, receives this answer, *Quia lusciosus*, " because you are purblind." By the Chinese laws (for this plant is found in China and Japan) it is forbidden to be used in fermented liquors. According to Withering, dogs are particularly affected by darnel; geese, and horses, are killed by it; but a small quantity mixed with their food is said to fatten chickens, and hogs.

The subjoined cases, communicated to the Editors of the Medical and Physical Journal, in the year 1799, by Mr. Marsh, surgeon to the 2nd Wiltshire Militia, fully illustrate the symptoms produced by the Lolium *temulentum* in England; and it will be perceived, that the bread, of which it was composed, excited the more violent effects when eaten hot: a fact previously noticed by Linnæus.

* Haller, *Hist. Stirp. indig. Helv. vol. ii. p. 206.*
† Ovid. *Fast. lib. i. v. 692.*

" In the month of September, a sack of leased wheat, with an equal quantity of tarling wheat, (*i. e.* the refuse seeds which pass the sieve, abounding very much with darnel (lolium), which by the generality of people, where the plant is much known, is called *cheal*, were ground and dressed together, and in the evening about ten o'clock bread was made of a part of it. Of this bread JAMES EDMONDS, about thirty-three years of age, and Robert his son, aged thirteen, ate the next morning about three o'clock; at five (two hours after) James became sick, and giddy, vomited, and purged much, felt pain and tightness in the calves of his legs, was confined at home the whole day, but on the following day was so far recovered as to be able to resume his work. Robert ate, during the day, about a pound and a half of this bread, and at night, on his return from his work, he ate more of the same; he felt giddy, and had pain of the head during the whole of the first day, with great pain and tightness of the legs, especially of the calves of the legs, extending to the ancles, attended with redness, and swelling, and itching of the skin, but it did not vomit or purge him till the third day. James, eleven years old — John, three—and Elizabeth, four—all partook of this bread the following morning about nine o'clock. They soon became giddy, were sick, vomited and purged greatly, their legs became painful, felt excessively tight, were swelled, inflamed, and itched much, and continued in that state eight or nine days, when the symptoms gradually disappeared, producing in one of them only (James) a small collection of a gelatinous fluid in the inside of the foot. But with Robert, who ate with his father at three o'clock in the morning, and also in the evening, and who was not vomited and purged till the third day, the pain and inflammation continued to increase till it terminated in gangrene; sphacelus succeeded, and he was under the necessity of suffering amputation of both legs. Very little general fever accompanied this till the latter stage of the disease, which, it is presumed, was the effect of absorption. The remedies made use of in this case (and that too without any sensible advantage) were, in the beginning, evacuants; in the latter state, camphor and bark, with the use of spirituous fomentations and antiseptic cataplasms. It should however be remarked, that this poor family lived at seven or

eight miles from medical assistance, and therefore they were not attended till two or three days after their attack.

" In several cases which have since occurred, as soon as the legs became painful, attended with inflammation, and swelling, scarifications were made of considerable length and depth, which, with evacuants in the very first stage, and afterwards large doses of camphor, with nitre, and opium, occasionally, have been attended with success.

" It may perhaps be worthy of notice, to remark, that this plant seems to have produced more deleterious effects when eaten quite new, and warm, which was the case with James, and Robert, at three o'clock in the morning, and there is no doubt but the father would have suffered equally with the son, had it not so soon been thrown off the stomach. There is also another circumstance to be noticed, which is, that all the patients I have seen have universally complained of violent pain in the calves of their legs, and expressing their pain nearly similar, viz. as though their calves were very tightly bound with cords."

In the second volume of the "*Histoire de la Societé Royale de Medicine à Paris*, it is likewise stated that a farmer, his wife, and servant, ate bread made with darnel and wheat. The two latter were attacked with vomiting and purging, and refused to partake of more. The farmer continued to use it the three following days, and died after suffering the most severe colicky pains. But the affection of the calves of the legs, as noticed by Mr. Marsh, is not spoken of.

During the blockade of Genoa, in 1800, some speculators in grain, mixed darnel with wheat, in their supplies. And a family of five individuals having eaten of flour bought in the public market, were all of them soon after seized with dimness of sight; confusion of ideas; prostration of strength; trembling; restlessness; depression of spirits; and cold rigors, especially in the extremities. These were most severe; attended with a disposition to vomit; and continued longest in the maid servant, who had eaten the largest quantity.

Dr. Cordier, in a paper addressed to M. Orfila, describes the effects produced upon himself by the ingestion of bread made of the farina of the seed of Lolium *temulentum*. It was taken in the

quantity of six drachms, without other food, early in the morning; and had a peculiar slightly disagreeable taste. Distraction of thought; indistinct vision; torpor, accompanied with general uneasiness, debility, and drowsiness, succeeded by efforts to vomit, speedily came on. Tremor of the limbs; part of the bread rejected by vomiting; great depression; speech difficult; slept for a few minutes; vomited the remainder of the bread with much colourless mucus; slept again at intervals, taking only a little soup, without appetite, till evening, when weakness and inappetence only remained. Next day, convalescent; but yet a sense of uneasiness in the epigastrium, accompanied by eructations of a peculiar taste, continuing on the following days, and still perceptible in bread containing some portion of darnel. Dr. Cordier was prevented from ascertaining the state of the circulation, and respiration, by the general disorder of the system. He concludes from it, that darnel should be ranked amongst the stupifying narcotic poisons; and that its action is especially exerted on the cerebral and nervous systems. The position of many naturalists, respecting the similarity of properties possessed by plants of the same natural family, meets here with an exception.*

Dr. Beck, in his valuable work on Medical Jurisprudence, remarks, "that it has been a subject of some interest and inquiry whether the spotted fever which ravaged several districts in the United States some years since, had its origin in part, or altogether, from eating this substance, combined with other grain. The facts adduced are very unsatisfactory; and lead to no definite conclusions." Some observations on the subject are contained in the New-England Journal, vol. v. p. 133, 156, and 285, by Professor Bigelow.

In the years 1722-23 an epidemic prevailed in Muscovy, which was also attributed to darnel. Medical men were appointed by the government to investigate the subject, and the following were the appearances observed on dissection.

In apertis cultro anatomico cadaveribus omnes partes ac organa tam externa quam interna emaciata, exsucca atque flac-

* Vide *Med. Repository, vol.* xiii. p. 260.

cida erant. Cor et vasa sanguifera parum cruoris retinebant. Ventriculus erat tenuis et contractus ad magnitudinem pugnæ minoris manus, aliquid lymphæ continens: Intestina flatibus reperiebantur turgida: pulmonis et omenti substantia putrida et fere consumpta: hepar maxima ex parte sphacelatum. Hæc facies erat morborum epidemicorum apud adultos. Apud infantes vero cladem enormiorem excitabant variolæ pessimi moris, confluentes et nigræ cum febre maligna, ut plurimum mortem post se trahentes.*

Medical Properties and Uses.—It will hence appear that both ancient† and modern writers fully agree as to the intoxicating qualities of darnel grass; and from its resemblance to barley, we fear that beer not unfrequently owes its powers to it; being credibly informed, by an eminent practical botanist, that two acres of ground, in Battersea fields, were lately cultivated with it; and we know no other purpose to which it could be applied. As a medicine it is not now employed: but was used internally by the ancients in cephalalgia, sciatica, gout, &c. and Aretæus administered it in pleurisy. According to Boerhaave, "it resists putrefaction, if applied externally; and from its cleansing quality, proves highly efficacious in disorders of the skin." Galen applied it to wounds mixed with vinegar; and Celsus recommended the meal of Lolium to be used in poultices. "Gravioribus vero doloribus urgentibus, cataplasma imponi quoque conveniet, vel ex lolio, vel ex hordeo, cui pinguis fici tertia pars sit adjecta." ‡

As we have not witnessed the effects of darnel, we cannot offer any practical information, as to the *treatment* required. Mr. Marsh, however, has pointed out the plan which has proved successful in several cases: and one of our Gallic neighbours, after describing in general terms the symptoms it produces, says, "*il faut provoquer le vomissement avec un grain d'emetique dans beaucoup d'eau tiede, et boire ensuite beaucoup d'eau et de vinaigre.*"

* Schœber, in *Acta Erud. Ann.* 1723, *p.* 446.

† Vide *Aristoteles. l.* V. *de somno et Vigil. c.* 3. Theophrastus *Eres. Hist. Plant. l.* 8. *c.* 5. Plin. *Hist. Nat. l.* 18. *c.* 17. Galen. *l.* 17. *simpl. et lib. de Aliment. Facult.*

‡ *A. Corn. Cels. de Med. lib.* viii. *cap.* 9.

a
b
c
d
e

IV

CROTON TIGLIUM.

Purging Croton.

Class XXI. MONÆCIA. *Order* VIII. MONADELPHIA.

Nat. Ord. TRICOCCÆ, *Lin.* EUPHORBIÆ, *Juss.* TITHYMALOIDES, *Vent.* EUPHORBIACEÆ, *Decand.*

EUPHORBIACEÆ, RICINEÆ, *Burn.*

GEN. CHAR. Male. *Calyx* cylindrical, 5-toothed. *Corolla* of five petals. *Stamens* ten to fifteen.

Female. *Calyx* polyphyllus. *Corolla* o. *Styles* three, bifid. *Capsule* trilocular. *Seed* one.

SPEC. CHAR. *Leaves* ovate-acuminate, serrate, glabrous. *Stem* arboreus.

Syn. Pinus indica, *Bauh. Pin.* 492. n. 11.
Ricinoides indica, *Flor. Zeyl.* 343.
Ricinus indicus arborescens, *Chom.* i. 61.
Croton Tiglium, *Lin. Sp. Pl.* 1426; *Willd.* iv. 531; *Sp.* 36.
κρότων, Dioscor.; Lignum Mollucense, *Dalech.* ii. 1864; Granum Mollucarum, *Rumph. Amboyn.* iv. 98. t. 42; Cade-avenac, *Rheed. Malab.* ii. 61. t. 33; *Raii. Hist. Plant.* 167; Grana Tiglii, *Lin.* 247; *Vog.* 172; Grana Tilli, *Berg.* 768; *Murr.* iv. 149; Tiglium, *Lew.* ii. 272; Nuclæ Catharticæ, *Geoffr.* ii. 428.

ORIENTAL APPELLATIONS.—Nervalum Cottay, *Tam.*; Jumal gota, *Hind.* and *Duk.*; Dund. *Per.*; Batoo, *Arab.*; Naypalam Vitiloo, *Tel.*; Iayapala, *Can.*; Nepala, *Sans.*; Bori, *Malay*; Nepālam, Cyng.; also Duntibeega, *Sans.*; Cheraken, *Jav.*; Croton, Fr.—(

THIS plant is a native of Java, and Ceylon, and is found in Malabar, China, Cochin China, and the Molucca islands. Of nearly ninety species of the genus Croton, this is the only one that is purgative.

It is a low tree, seldom exceeding twelve or fifteen feet in height, with spreading branches, and covered with a soft blackish bark. The leaves are alternate, ovate-acuminate, serrated, and smooth, having two glands seated at the base, and supported on longish petioles. The flowers are in erect, simple, terminating racemes. In the male flowers (*a*) the calyx is cylindrical, and five-toothed; the corolla consists of five straw-coloured

petals, and there are from ten to fifteen stamina (*b*). In the female flowers (*c*) the calyx is many-cleft, and reflected under the germen; there is no corolla, but there are three bifid styles. The capsule (*d*) is trilocular, and smooth, each cell containing one seed. The seeds are about the size of a hazel-nut, somewhat concave on one side, and convex on the other, of a brownish yellow colour. Our figure was taken from a drawing in the collection of the Medico-Botanical Society of London.

Chemical Properties.—The Croton *Tiglium* has excited considerable attention during the last three or four years; for although the active properties of its seeds have been long known under the names *grana molucca, nuculæ catharticæ, tilii grana*, and *grana tiglii*, the violent effects they frequently produced prevented them from being generally used. It remained for practitioners of the present day to ascertain their claims to notice; and we are indebted to Dr. Ainslie, Dr. Nimmo, Mr. Wilson,* Mr. Iliff, and several others, for their scientific and chemical investigations respecting them.

"Mr. Frost found that the expressed oil of the seeds of this plant was entirely soluble in ether, the oil of turpentine, and particularly so in alcohol. One hundred grains of the seed consisted of

32 shell
68 kernel

100

"One hundred grains of the seed were digested in three drachms of sulphuric ether, sp. grav. 71, and afforded 25 grains of fixed oil.

"Thirty-two grains of the oil were put into a Florence flask, containing some alcohol previously digested on olive oil, to prevent the spirit from dissolving any of the oil of the croton tiglium seed. The mixture was now agitated, and then passed through a filter containing carbonate of ammonia: the filtered solution was then evaporated without heat, and yielded—

"Active matter (soluble in alcohol and ether) combined with a very small portion of fixed oil . . . 8.5 grs.
Inert fixed oil 23.5

32 grs."

According to the experiments of Dr. Nimmo, one hundred grains of the seeds yield 45 grains of active matter; but Mr. Frost has not been able to discover so great a quantity in any sample he has met with: 32 grains per cent. being the largest

* See a valuable article "On the History of the Croton *Tiglium*, and its employment in Native Medicine," by H. H. Wilson, Esq. in the 1st. vol. of the *Transactions of the Medical and Physical Society of Calcutta*, p. 249.

proportion. Dr. Paris has repeated some of Dr. Nimmo's experiments, and discovered an active principle analogous to *elatin;* to which he has appropriated the name *tiglin;* it does not appear to possess any of the characters of a salifiable basis.

To obtain the oil, Dr. Nimmo recommends the following plan:

"After digesting the bruised seeds a sufficient time, the whole should be thrown in a filter, closely covered during the process of filtration, and the residuum afterwards washed with a little ether. By this process about two drachms of the oil may be obtained from 300 grains of the seeds. Of the oil thus obtained, an alcoholic solution may be prepared, in the proportion of eight drops of the oil to an ounce of alcohol, as one of the best media for exhibiting it; and as it allows the dose to be readily proportioned, according to the circumstances of the case."

Dr. Nimmo's prescription.

℞ Solut. Alcohol. Crotonis Tiglii ʒß
Syrup. Simplicis.
Mucil. G. Acaciæ āā ʒij
Aquæ Distillatæ ℥ß

Fiat haustus.

After swallowing a little milk, take the draught quickly, and wash it down with the same diluent.

ADULTERATIONS.—The following is Dr. Nimmo's method, to detect adulterations of the oil:—

"Let a very light phial be counterpoised in an accurate balance; pour into it 50 grains of the suspected oil, add alcohol, (which has been previously digested upon olive oil,*) agitate them well, pour off the solution, and add more alcohol as before, until the dissolved portion is diffused in such a proportion of alcohol, that each half drachm measure shall contain equal to one dose of the oil of *tiglium*, for an adult. By afterwards placing the phial near a fire, to evaporate what remains of the alcohol in the bottle, *if the residuum be to that which has been abstracted by the alcohol as* 55 *to* 45, *the oil is genuine.* If olive, or any other oil, little soluble in alcohol, has been employed as the adulterating agent, it is evident that the residuum would be in larger proportion; but should *castor oil* have been employed for that purpose, the proportion of the residuum will be smaller even than in the genuine medicine."

MEDICAL PROPERTIES.—Every part of the plant is endowed with medical virtues, and the pulverized root, acting as a drastic purgative, is considered at Amboyna and Batavia to be a specific for dropsy: while the wood (*lignum pavanæ*) administered in small doses, exerts diuretic, gentle emetic, and powerful diaphoretic effects. By the Japanese, the leaves, dried and pow-

* The object of this preliminary step is to saturate the alcohol with a fixed oil, that it may not dissolve any portion of that in the tiglium, and thus confuse the results. The quantity of fixed oil, which alcohol is capable of dissolving is extremely small, and will not, in the least degree, injure the alcoholic solution for subsequent medicinal use.

dered, are externally applied to the bites of serpents. The subjoined form for the preparation of the seeds, as adopted by the native physicians of India, was given by a learned Persee Vydia, of Surat, to Dr. White.

"After having removed the shells from the seeds, tie the kernels in a small piece of cloth like a bag; then put this into as much cow-dung water as will cover the bag, and let it boil; secondly, when boiled, split the kernels in two and take a small leaf from them, which is said to be poisonous; and thirdly, pound the whole into a mass, to which add two parts *katha*, (catechù,) that is, to one drachm of croton add two of *katha*, and divide into pills of two grains each. The addition of the katha is said to correct its acrimony altogether, and to prevent any griping from ensuing."*

Croton oil has been warmly recommended as a remedial means in spasmodic cholera; and Dr. Tegart, who strongly urges its administration, has recorded his own case, in which much benefit seems to have been derived from its use; he says,

"On Wednesday, the 18th of July, I was seized with a slight diarrhœa, which continued and increased on the day following; the matter discharged was passed without pain, so that I was thrown off my guard as to the nature of the complaint; towards evening of the second day I became restless and feverish; at midnight my pulse was 120, and very weak; spasms in my legs and arms led me to think for the first time that I was labouring under spasmodic cholera. On examining the copious flowings from the bowels, I found them consist of a limpid fluid resembling chicken-broth or barley-water; this is now understood to be the serous part of the blood: when this escapes, only the thick dark particles remain in the blood-vessels, which soon become stagnant, and occasion death. This was nearly the case with me, as the pulse had become imperceptible, and the dark streaks in the lines of the veins, and the colour of the skin, denoted that the collapse was fast approaching. The question then was, can a new action be produced in the intestinal canal? Yes, I said, it is possible, and I will try that remedy which I have so strongly recommended to others in this disease. I took three drops of croton oil on a little sugar, and confidently waited the effects. The following took place in succession:— In twenty minutes the stomach was discharged of an immense quantity of undigested food; the liver, which had been distended to a most painful degree with bile, poured its contents into the intestines; the gruelly discharge from the bowels was now succeeded by copious evacuations of bile and offensive matter, the cramps ceased, and the pulse rose. All those favourable occurrences took place in less than an hour after taking the croton oil, and I pronounced myself out of danger. This is my case, and I hope and trust it may prove an important one to the

* Ainslie's *Materia Indica*, fol. 103.

public, as it may lead to a more successful mode of treatment than has hitherto been employed in this fatal disease."—*Med. and Surg. Journal.*

The most elaborate series of experiments which have been instituted to ascertain the medicinal properties and effects of croton oil, are those by Professor Andral, who for some time past has been engaged in making many trials of the oil croton tiglium, administered both internally and used externally. The following are the results of his observations on the effects of this potent medicine, as published in the "Lancette Francaise:"—A drop of the oil of croton tiglium, exhibited in pills, or in a tea-spoonful of syrup, or of ptisan, to a person in a healthy state, produces immediately a burning in the mouth, in the fauces, and sometimes even along the whole course of the œsophagus, an unusual heat in the stomach, occasionally nausea, but rarely vomiting: this heat passes away in a few minutes. It is an hour or an hour and a half after taking the oil before the first evacuations occur, preceded by flatulent discharges and slight colicky pains, but without tenesmus, and without anal heat. The stools are very liquid, come suddenly away, and look sometimes like clear water, and sometimes have a slight yellowish hue; commonly, there are eight or ten evacuations in twenty-four hours. On the following day the effects are over; the tongue has its natural appearance; there is a little thirst; the abdomen is soft, but the bowels not open. M. Constant, who has repeated these experiments, never but once met with pains in the stomach which required to be treated with antiphlogistic means.

Most frequently the pulse, observed with care, diminishes in frequency under the action of this medicine; sometimes it does not vary; twice only has it been found to be accelerated: the skin retains its warmth; sometimes there is a perspiration noticed, followed by a tranquil sleep. As to the urine, it was increased only in one paralytic subject, who, after having taken a drop of the oil, had no other evacuation. Furthermore, administered from half a drop to three drops, it has never occasioned any inflammation of the stomach or intestines.

Applied externally upon some spot of the skin, the oil of croton produces a slight smarting, and some hours after an eruption of a number of small red pimples, which become pustules, having much the appearance of variolous pustules, or of those produced by tartar emetic ointment.

Four or five drops applied to the smooth part of the palm of the hand, cause a confluent eruption, of which some pustules are surrounded by inflamed areolæ, and occasion acute pain, which, however, passes away in twenty-four hours. These experiments have been made on more than thirty patients, and the frictions instituted on the abdomen, in the arm-pits, and on the thighs, with from twelve to twenty drops pure, or mixed with oil of sweet almonds in the proportion of from ten to twenty

drops to one ounce of the oil of sweet almonds. Once there was observed to be three abundant evacuations following the frictions in a few hours. The progress of the eruption is as follows: at the end of from thirty to fifty hours all the pustules are developed, some of them confluent, and there are seen large bladders filled with a whitish opaque fluid.

The pustules continue to increase in size during three or four days, and then remain stationary; a little afterwards they dry like the eruption of small-pox. If the spots have been numerous, the skin becomes covered with scabs, which desquamate slowly.

CASES IN WHICH MUCH BENEFIT FOLLOWED THE EXTERNAL USE OF CROTON OIL.—A man aged fifty-four, who some time previously had erysipelas in the face and scalp, accompanied with adyuamic symptoms, was admitted into La Pitié, towards the end of last October, with paralysis on the left side of the face; the affection was characterized by insensibility of the parts, and almost total loss of sight, hearing, taste, and smell, still without there being any distortion or paralytic motion of the mouth. He was bled and purged without benefit; but eight drops of croton oil being rubbed on the affected side of the face caused a confluent eruption, and at the end of two days all the symptoms had disappeared, and the cure was complete.

A painter, aged forty years, who had undergone seven mercurial courses, was seized, after a sexual debauch, with a paralytic affection of the muscles of the lip and right cheek, with numbness on all that side of the face, but without loss of feeling. A friction with eight drops of oil of croton was followed with a similar result to the preceding case, and in a few days the cure was complete.

A joiner, fifty years old, who had suffered with sciatica for about twenty years, which, although relieved often with oil of turpentine, still continually recurred; after one friction with the oil of croton was entirely cured in less than three days.

A labourer, forty-eight years of age, affected with a like ailment, which had lasted for four months, and which extended from the lip to the sole of the foot, used thirty-two drops of croton oil in four frictions, made at intervals of a single day, on the posterior part of the lower extremity, from above downwards. A very painful eruption followed these frictions, but the sciatic pains diminished even on the first friction, and disappeared as if by enchantment after the fourth.

Similar benefits were received by a woman fifty-eight years old, and who was afflicted with a similar disease. In two cases of chronic affection of the stomach which had resisted ordinary treatment, frictions with the oil of croton having produced confluent eruptions, acted like a powerful counter-stimulant, and restored the appetite, removed the pains in the stomach, restrained the vomiting, and so forth. Other instances are recorded, but

as they are less interesting than those already given, we shall pass them by to relate some cases of the benefits derived from its

INTERNAL USE.—A shoemaker, aged thirty-five, of a tolerably good constitution, was admitted into the hospital affected with largngitis and chronic bronchitis, complicated with violent asthmatic symptoms. Bleeding and demulcent drinks gave no relief. M. Andral then administered a drop of croton oil in a tea-spoonful of ptisan; this was followed by vomiting and five abundant stools. From this moment the improvement became obvious; but as the larynx appeared to be the principal seat of evil, the front part of the throat was rubbed with ten drops of the same oil, which caused a confluent eruption of pustules. The respiration became more free; the voice, at first scarcely audible, became much more clear; and in short, after the application of twenty leeches to the upper part of the steruum, and the exhibition of four grains of calomel, the improvement was decided, and the condition of the patient very satisfactory.

A shoemaker, twenty-three years old, was tormented for a month with an obstinate head-ache, attended with noises in the ears, vertigoes, and indistinctness of vision. Bleeding and mustard pediluvia afforded very slight relief, but a drop of croton oil taken two hours after venesection, and which produced twenty liquid evacuations from the bowels, effected by the next day a perfect cure.

A hosier, aged thirty-two, admitted into the hospital on the 3rd of November, presented the following symptoms, which by authors have been said to distinguish asthma; he had intense dyspnæa, respiration accompanied with a very decided wheezing and sonorous rattling; percussion on the chest gave a tympanitic sound, and yet auscultation could not detect more than a weak respiratory murmur, thus proving that the air did not enter the pulmonic cellules. He was bled largely, but without benefit, on the day of his admission; a drop of the croton oil was exhibited, which procured many abundant stools. On the next day the rattling in the throat had considerably lessened, the respiration was more free, and the patient was delighted with his condition, which became still more improved by another purgative two days afterwards, with a pill containing a quarter of a grain of the oil. All things from this time went on well, and in a few days the man was cured.

Furthermore, M. Andral has administered the medicine, the effect of which has now been detailed, in five severe cases of painters' colic, with the greatest success: two or three days sufficed to effect the cures of all these individuals.

The oil, met with in commerce, is of very unequal powers; a circumstance that accounts for the different versions of its effects; and renders the experiments already detailed, doubly valuable. One drop of it has frequently produced hyper-catharsis, while *ten*

of other samples, have been given without effect; being often adulterated with an oil obtained from the seeds of the Jatropa *Curcas*, and *J. multifida*. The genuine oil is not to be trifled with; * for it is said by Bergius to produce purging if rubbed on the navel: but administered in small doses of one or two minims to adults, it proves a valuable agent in obstinate constipations of the bowels, when unattended by inflammation: and in apoplexy, convulsions, mania, and other diseases, "which require, along with the complete evacuation of the primæ viæ, the lessening of the circulating mass." It is best administered in pills, conjoined with soap, and an aromatic; or in the form of mixture, blended with mucilage and syrup. For example:—

℞ Olei Tiglii gtt vj
Glycyrrh pulv. ℈j
Saponis duri ʒß
Olei Caryophyl. gtt iij
Syrup. simpl. quod satis sit.
Misce, fiant pilulæ duodecim: dosis, duæ.

℞ Oleii Tiglii gtt. vj-viij.
Mucilaginis Acaciæ.
Syrup. Rhœados. āā ʒiß
Lactis Amygdalæ ʒiv Misce.
Dosis, fluiduncia sextis horis.

THE TREATMENT in cases of poisoning, from an improper administration of the oil, should they occur, consists in large draughts of mucilaginous drinks, together with repeated doses of opium, and the general antiphlogistic practice.

* Lewis remarks, "Godfrey limits the dose to one drop, *which is probably an error of the press for one drachm*:" this criticism shows how little was until lately known of its effects; the knowledge of one generation being lost in the next.

V

LEONTODON TARAXACUM.

Common Dandelion.

Class XIX. SYNGENESIA.—*Order* I. POLYG. ÆQUALIS.

Nat. Ord. COMPOSITÆ, *Lin.* CICHORACEÆ, *Juss.*
COMPOSITINÆ, CICHORACEÆ, *Burn.*

GEN. CHAR. *Receptacle* naked. *Involucre* double imbricate. *Pappus* stipitate, hairy.

SPEC. CHAR. *Leaves* runcinate, glabrous, toothed; *outer scales* of the calyx reflexed.

Syn.—Dens leonis. *Raii. Syn.* 170. 1; *Camer. Epit.* 286. *f.*; *Ger. Em.* 290. 1; *Park.* 789; *Matth. Valgr. v.* 1. 461. *f.*
Hedypnois Taraxacum. *Scop. Carn.* II. *n.* 957.
Leontodon Dens leonis. *Lamarck Ency. Method.* 3. 349.
Taraxacum officinale. *Villars Dauph.* 3. 72.
Leontodon vulgare. *Lamarck Fl. Franc.* 2. 113.
Leontodon officinalis. *Withering Bot. Arr.* ed. 4. 679; *Hull.* 173.
Leontodon Taraxacum. *Lin. Sp. Pl.* 1122; *Willd. v.* 3 1544; *Smith Fl. Brit.* 822; *Curt. Lond. t.* 58; *Woodv. t.* 3.

FOREIGN APPELLATIONS.—*Dent de Lion*; *Pissenlit*, Fr.; *Tarassaco*, It.; *Cardillos tagarnina*, Sp.; *Lowenzahn wurzel*, Ger.

THIS is a well known perennial inhabitant of our meadows, pastures, and gardens, generally despised as a troublesome weed; it flowers from April till late in autumn.

The root is spindle-shaped, white and fleshy within, and covered externally with a brown epidermis. The ascending axis being abortive all the leaves spring from the crown of the root; they are numerous, spreading, smooth, of a bright green, tapering towards the root and runcinate, or deeply cut into sharp lobes, unequal, and pointing downwards. The flower stalk, or, as it is termed in botanical language, scape, is erect, round, smooth, very brittle, tubular, and terminated by a single capitulum of flowers, or rather florets of a golden yellow colour, which expand in fine weather only, and close in the evening. The common

calyx, or, as it is now more correctly named, the involucrum, is imbricated and oblong, and the bracteæ of which it is formed are surrounded by a whorl of shorter patent (and in the officinal species reflexed) bracteolæ. The head of flowers is composed of very numerous monopetalous, equal, ligulate, truncated, five-toothed florets. The five filaments are capillary and slender, with conjoined antheræ. The germen is obovate, crowned with a slender cylindrical style, and furnished with two revolute stigmas. The receptacle, to which the seeds are attached, is convex and dotted. The seeds (*a*) are solitary, oblong, each enclosed in a scabrous achenium; and supporting a simple radiated pappus, on a long pedicel.—Fig. (*b*) is a floret somewhat magnified, showing the germen and five united anthers surrounding the forked style.*

DISTINCTIVE CHARACTER.—Leontodon *palustre*, Marsh Dandelion, which is regarded by some as a distinct species, and by others merely as a variety, may be distinguished from L. *Taraxacum*, by its having the outer scales of the involucre shorter,

* As the young botanist generally finds some difficulty in acquiring a clear and precise idea of the structure of the compound flowers, occasioned by the minuteness of the parts of fructification, which are however much larger and more conspicuous in this than in many others of the class Syngenesia, we have taken the liberty to transcribe the following observations from Curtis's *Flora Londinensis*, for the sake of illustration. "On examining," says Mr. Curtis, "the flower of the Dandelion, he will find that it is not a double flower, properly so called, as he might be led to think from its fulness; but that it is composed of a great number of *flosculi*, or lesser flowers, placed close together on one common receptacle or bottom, and enclosed by one common or general calyx. On dissecting each of these *flosculi*, he will find them to consist of a *corolla*, or petal, which at bottom is tubular, but towards the extremity flat; that from the bottom or tubular part of the corolla, five *filaments* spring, which are small and short, yet loose and unconnected; that these filaments are furnished with *antheræ*, which unite together, and form a slender tube. Beneath the corolla is placed the *germen*, or future seed, from whence the *style* or middle part of the *pistillum* proceeds, and passes up through the middle of the flower betwixt the *filaments* and through the tube formed by the union of the *antheræ*, and is furnished at the top with two *stigmata* which roll back. At a little distance from the *germen*, the lower part of the *style* is surrounded by numerous upright hairs which are the future *pappus* or *down*." This down, he will find to be the true calyx.

"Those parts of the flower which were more immediately, or more remotely necessary to the impregnation of the seed, having now performed their office, decay; the *corolla* with the *stamina* and upper part of the *pistillum* drops off; the seed becomes larger, the lower part of the pistillum remains, is elongated, and becomes the *footstalk* of the *pappus*; and the seed as yet immature, with the pappus as yet moist, are all enclosed and pressed by the *calyx* (i.e. involucre) into a conical form. This is the appearance of the second state. The fructification still going forward, the *seed* becomes ripe and brown. The *pappus*, now deprived of its moisture, expands itself in every way, pushes back the calyx, and assumes a spherical form. The seeds, fitted for vegetation, and thus exposed, are carried away by the first strong wind, and a 'new race planted far from their native soil.'"

and not reflexed; by the leaves being less runcinate, and the flower and whole plant smaller and more slender. In its sensible qualities it agrees with the preceding species; the distinction therefore, in a medical point of view, is not very important.

The summer of 1832 has been peculiarly favourable to the extra-development of plants, and many irregular growths have been observed. One of not the least curious is the evolution of bracteæ, upon the usually naked scape of the Leontodon Taraxacum. In some of the specimens examined and preserved, the bracteæ are evidently parts of the involucre not collected into the normal whorl; but in others, they have all the characters, and are nearly as large as the ordinary leaves; thus rendering the plant as it were caulescent. Should this form be permanent, it might almost be regarded as a distinct species.

The term Leontodon, is derived from λεων, a lion, and ὀδους, tooth, and is so called from the indentments of the leaves, which have been fancifully compared to the jaw or teeth of a lion. Linnæus bestowed this name upon the genus, in preference to the compound one of Dens-Leonis, which had been given by Tournefort; and Taraxacum is said to be an Arabian corruption of τροξιμον, *edule*, one of the names of Ceres. From the receptacle looking bald, after the flowers and seeds are gone, it is sometimes called Monkshead: while by the French it is termed *pissenlit*, from its diuretic properties, and it has obtained in this country a vulgar designation expressive of the same powers. The English name Dandelion appears to be a corruption of *Dent de lion*.

Qualities and Chemical Properties.—The plant is nearly inodorous, and its taste is somewhat bitter, and sweetly acidulous. Although it yields but little of its virtues either to alcohol or ether, (water being the best menstruum,) it has been found on analysis to contain caoutchouc. *Infusion of galls, nitrate of silver, oxymuriate of mercury, acetate of lead, and sulphate of iron, precipitate its decoction*, and are therefore incompatible with it. The milky juice is supposed to contain tartaric acid, as it reddens the vegetable blues; and it is probable, remarks Dr. A. T. Thomson, that the active principles of taraxacum are, extractive gluten, a bitter principle, which does not appear to be resinous, and tartaric acid, either free, or as a supertartrate.

Medical and Œconomical Uses.—Dandelion is mode-

rately aperient, and diuretic; the whole of the plant possessing these properties, which are most active in the roots. As a domestic medicine it is often administered with superstitious expectations; PARK, an old English author, remarking, "whoso is macilent, drawing towards a consumption, or ready to fall into a cachexy, by the use hereof for some time together, shall find a wonderful help." Many authorities might be quoted in its favour, but like most of our indigenous medicines it is seldom prescribed. Dr. Pemberton, however, recommended it for visceral affections; and Dr. Good states, "that its obvious character is that of increasing the flow of urine." Boerhaave, also, had a high opinion of its powers, and esteemed it capable, "if duly continued, of resolving obstinate obstructions and coagulations of the viscera:" and having directed our attention to it for several years, we are persuaded that his conclusions are not altogether incorrect. Where the stomach is irritated by its own secretions, arising from chronic inflammation affecting some of the abdominal viscera, especially the liver; and where active treatment would be injurious, the decoction of Taraxacum, or the extract, administered three or four times a day, will often prove a valuable remedy. In habitual costiveness, the result of a long residence in hot climates, dandelion is a most efficient medicine; for instead of impairing the constitution further, by producing a purgative action that it may be difficult to control, it assists the bowels in performing their functions, and constrains them mildly and regularly to perform them: and Dr. James Johnson ranks it amongst those agents that possess the power of preventing the formation of biliary concretions, by keeping up a due and healthy secretion in the liver. As an adjuvant to other more active remedies, it may be prescribed with advantage in dropsical cases, and for induration of the liver; while by our continental neighbours, it is recommended for pulmonic tubercles, and some cutaneous diseases. When its diuretic effect is required, supertartrate of potass may be combined with its decoction or infusion. We have not discovered any narcotic powers from its administration, although they frequently reside in the lactescent plants.

It is a fact well known to gardeners, that plants when blanched, lose many of their active properties; and dandelion thus prepared, is frequently eaten on the continent in salads;* and sometimes by the lower class of people in this country, in its native state; while at Gottingen, the roots are roasted and used by the poor for coffee, a decoction of which, properly prepared, can hardly be distinguished from the real. The French eat the young roots, and the etiolated leaves, with thin slices of bread and butter; and it is stated, that the inhabitants of Minorca subsisted on this root, after a swarm of locusts had destroyed the fruits of the earth. Miller remarks, that "goats eat it, swine devour it greedily, sheep and kine are not fond of it, and horses refuse it."

Preparations.—Lewis justly remarks, that "neither the plant in substance, nor its preparations, bear keeping well; the dried root and its extract losing their bitterness." The extract, indeed, as it is usually made, can scarcely be supposed to have much power, and to the badness of the preparation may be attributed its want of success in many cases. Having seen the extract prepared by a scientific friend, Joseph Houlton Esq. F.L.S. we do not hesitate to affirm, that it possesses *all* the virtues of the plant; and to him we are indebted for the following communication. He writes, "I have great pleasure in sending you an account of my method of preparing the *Extractum Leontodinis Taraxaci*, which is as follows:—

"At the beginning of autumn, take of the recent roots of dandelion four pounds, let them be well bruised in a marble mortar, and the juice expressed; which set aside. Moisten the pressed roots with two pints of water, bruise them again, and press off the fluid. Then boil the roots, in as much water as may be sufficient, for an hour; press off the decoction; set it aside to cool; then pour it off from the fæces, and mix it with the fluid resulting from the second pressing. Carefully evaporate it with a gentle heat to the consistency of syrup; when cool, let it be intimately mixed with the juice procured by the

* In agro Pariensi frequens ubique nascitur, et in hortis colitur. *Geoff.* iii. 399.

first pressing; let the extract be now exposed in shallow earthen vessels, (common table dishes, or plates will answer the purpose,) until it acquire a stiff pill consistence. If it be left too moist, chemical changes will take place in it, producing acidity.

"Extract of dandelion, prepared in the manner detailed above, I have used *uncombined* in icterus, and in various chronic morbid affections of the digestive organs, with the most decided efficacy. The treacle-like trash, sold under the name of Extractum Taraxaci, I have ever found to be an inert article. I am inclined to judge favourably of the extract prepared by Allen in vacuo: it agrees in its sensible properties with the extract that I make, but it is more liable to become decomposed, from being a moister preparation.

"The most usual modes of exhibition.

"℞. Ext. Leontod. Taraxaci ʒj.

"In pilul. duodecim divid., quarum tres ter in die dentur.

"℞ Ext. Leontod. Taraxaci ʒj.
Potassæ Sulphat, ʒj.
Syrup. Simplic. q.s. ut ft. Massa,

in pilulas æquales triginta dividenda: Tres ter in die dentur."

Mr. Sprague, of Solihull, near Birmingham, has given to us the following select formulæ, which he states to be very effectual means of exciting the secretion of the kidnies, in anasarca and ascites:—

℞ Extract. Taraxaci, ʒß
Decoct. Taraxaci, (Ph. Dub. 4826) ʒix.
Spirit. æther. nitr, ʒi.
Syrupi zingiberis. ʒij.

M. ft. Haustus, ter in die capiendus.

℞ Potassæ Supertar. ʒij.
Caryophyl. contus. ℈ij.
Sacchari purif. ʒi,
Decoct. Taraxaci (Ph. D,) lbj.
Macera per horas duas et cola.

Dose, a fourth part every six hours.

The late Dr. Baillie preferred a decoction of the fresh roots to any other preparation; and was accustomed to prescribe it with much benefit in those functional hepatic disorders so common to persons who have been long resident in warm climates.

Off. Prep.—Extractum Taraxaci. *L. D.*

DATURA STRAMONIUM.

Officinal Thorn-Apple.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. LURIDÆ, *Lin.* SOLANEÆ, *Juss.*
SOLANEÆ, *De Cand.* SOLANACEÆ, SOLANEÆ, *Burn.*

GEN. CHAR. *Corolla* funnel-shaped, plaited. *Calyx* tubular, angular, deciduous. *Capsule* 4-valved half 4-celled.

SPEC. CHAR. *Pericarps* spinous, ovate, erect. *Leaves* ovate, glabrous.

Syn.—Solanum pomo spinoso oblongo, flore calathoide, Stramonium vulgò dictum. *Raii. Syn.* 266. 1.
Stramonium majus album. *Park.* 260; *Raii. Hist.* 748
Stramonium spinosum. *Ger. Em.* 348. 2; *Lamarck. Fl. Gall.*
Stramonium fœtidum. *Scop. Carn. n.* 252.
Stramonium. *n.* 586. *Hall. Hist. v.* 1. 253; *Med. Mus.* i. 448. *t.* 6.
Datura lurida. *Salisb. Prodr.* 131.
Solanum Maniacum, Dioscoridis. *Column. Phytob.* 46. *t.* 47.
Tatula. *Camer. Epit.* 176. *f.*
Datura Stramonium. *Lin. Sp. Pl.* 255; *Willd. v.* 1. 1008; *Fl. Brit.* 254; *Curt. Lond. fas.* 6. *t.* 17; *Woodv. t.* 124; *Bull. Fl. t.* 13.

FOREIGN.—*Pomme-épineuse, ou l' endormie*, Fr.; *Stramonio*, Ital.; *Steckapfel*, Ger.

THIS is an annual plant originally imported from America, where it is known under the name of *Apple of Peru*, *Devil's Apple*, and *Jamestown weed*; but was first cultivated in this country from seeds that were brought from Constantinople by Lord Edward Zouch, about the year 1597, and by the old writers of that period it is called the "Thorny Apple of Peru." A variety is also native to America, which is generally a larger plant, bearing purple flowers, striped with deep purple inside, and having a reddish stem, minutely dotted with green. It is supposed to be

the D. *tatula* of Linnæus, and possesses the same sensible and medicinal properties as the plant under consideration.* The common Thorn-apple is an annual plant, frequently observed naturalized on dunghills, in waste places, and near gardens, in the south of England, particularly in the environs of London, whence it has been admitted into our Flora, by Sir J. E. Smith, and figured in "English Botany," t. 1288.

The thorn-apple rises from a white, branched, woody, and fibrous root, to the height of about two feet. The stem is herbaceous, erect, round, smooth, of a yellowish green colour, undivided below, dichotomous above, and cloathed with leaves, springing from the divisions of the stem and branches; which are of a dark green colour on the upper surface, and paler beneath; ovate, pointed, smooth, alternate, sinuated, and toothed, on long cylindrical footstalks. The flowers are large, erect, of a snow white colour, and proceed singly, on short footstalks from the axillæ of the stem and branches. The calyx is monosepalous, oblong, tubular, and five-toothed: the corolla (*a*) is funnel-shaped, with the tube cylindrical, longer than the calyx; the limb, spreading, five-angled, acuminate, with five teeth. The filaments are five, awl-shaped, and support oblong flat heart-shaped anthers.(*b*) The style (*c*) is erect, filiform, the length of the stamens, with an obtuse bi-lobed stigma.(*d*) Germen ovate (*e*). The fruit (*g*) is a roundish, ovate capsule, beset with sharp awl-shaped spines, two-celled at the top, four-celled at the bottom, as two of the valves do not extend all through the capsule; four valved, and seated on the base of the calyx. The seeds are numerous, and kidney-shaped.

The generic name Datura, some writers, as Forskal, have

* Kalm, in his travels in North America, speaking of this plant, observes, that "it grows in great quantities in all the villages; its height is different according to the soil it is in; for, in a rich soil, it grows eight or ten feet high; but, in hard and poor ground, it will seldom come up to six inches. This *Datura*, together with the *Phytolacca*, or American nightshade, grow here, in those places near the gardens, houses, and roads; which in Sweden are covered with nettles and goose-foot: which European plants are very scarce in America; but the *Datura*, and the *Phytolacca* are the worst weeds here; nobody knowing any particular use of them."

derived from the Arabic appellation (Tâtôrah,) while others have made it classical from *do, dare, daturus,* because it is given as a narcotic. The specific name, stramonium, is supposed to be a corruption of *στρύχνομανικον*, in reference to its effects in causing madness.

QUALITIES.—Every part of Stramonium when recent, has a strong, heavy, disagreeable odour: in America said to be sometimes so powerful, that intermittent fever has been ascribed to it, which Beck remarks, "is evidently laying too much stress on the plant; but its effluvia are certainly noxious." It possesses a bitter taste, and imparts to the saliva a green tinge, when chewed. Cows, horses, sheep, and goats refuse this plant.

CHEMICAL PROPERTIES.—The virtues of Stramonium, which appear to be extractive, are imparted to water and alcohol; but most readily to the former. This extractive principle is copiously precipitated from the infusion, by muriate of tin. With *sulphate of iron* it gives a deep green, and sometimes an olive colour; and with *gelatin* undergoes no change. "The watery infusion is transparent, with a very pale yellow hue, which is dissipated by acids, but very much deepened by the alkalies." According to Wedenberg, (Dissertatio Medica de Stramonio usu,) it contains gum or mucus; resin and a volatile principle, which Dr. Todd Thompson pronounces to be carbonate of ammonia. Dr. S. Cooper, of America, by evaporating infusion of Stramonium, observed a large number of minute crystals, resembling particles of nitre: and Professor Bigelow, thinking that they might be analogous to the crystals obtained by Derosne from opium, instituted a series of experiments to ascertain the fact, but was unsuccessful. Brandes has succeeded in extracting from the seeds * of Stramonium, an

* The seeds yielded the following constituents to that Gentleman:—fixed oil 13.85; thick fatty oil 0.8; a fatty butyraceous matter with resinous chlorophylle 1.4; wax 1.4; resin insoluble in ether 9.9; yellowish red extractive matter 0.6; malate of *daturine* 1; uncrystallizable sugar, with a salt with the base of *daturine* 0.8; gummy extractive matter 6; gum, with different salts 7.9; bassorine, with alumina and phosphate of lime 3.4; woody fibre 22; phyteumacolle 4.55; albumen 1.9; a matter analogous to ulmin, called by M. Brandes *glutenoine* 5.5; malate of *daturine*, malate and acetate of potass, and malate of lime 0.6; a membranous secretion, containing silica 1.35; water 15.1; loss 1.95.

alkaline principle similar to Atropine in its relations, to which he has given the name *Daturine*. It contains the whole of the poisonous matter of Stramonium, and its vapour is likewise exceedingly prejudicial.

Poisonous Effects.—Stramonium, when administered in too large doses, produces intoxication, nausea, delirium, loss of sense, drowsiness, a sort of madness and fury: loss of memory, sometimes transitory and sometimes permanent; convulsions, sense of suffocation, paralysis of the limbs, cold sweats, excessive thirst, dilatation of the pupil, tremblings, and death.

Milne remarks, "Of the intoxicating quality of their native species of Stramonium, the women in some of the Asiatic Islands, we are informed by travellers, so dexterously avail themselves, as not only with impunity to use the most indecent freedoms, but even to enjoy their gallants in the company of their husbands, who, being presented with a proper quantity of this soporific and lethean drug, are at first seized with a fatuity, and pleasing delirium, which are soon followed by those very convenient symptoms, stupor, and a total want of recollection:" and so general was this credulity in former times, that the Royal Society gravely inquired of Sir Philberto Vernatti, "Whether the Indians can so prepare the stupifying herb Datura, that they make it lie several days, months, or years, according as they will have it, in a man's body; and at the end kill him without missing half an hour's time?"

In Beverly's History of Virginia, p. 121, we find the following curious passage:—The Jamestown weed, which resembles the thorny apples of Peru, (and I take it to be the plant so called,) is supposed to be one of the greatest coolers in the world. This being an early plant, was gathered very young for a boiled salad, by some of the soldiers sent thither to quell the rebellion of Bacon; and some of them ate plentifully of it: the effect of which was a very pleasant comedy, for they turned natural fools upon it for several days. One would blow up a feather in the air, another would dart straws at it with much fury; another stark naked was sitting up in a corner like a monkey, grinning and making mows at them; a fourth would fondly kiss and paw his companions, and sneer in their faces with a countenance more antic than any in a Dutch droll. In this frantic condition they were confined, lest, in their folly, they should destroy themselves. A thousand simple tricks they played, and after eleven days returned to themselves again, not remembering anything that had passed.

Dr. Rush saw a child between three and four years old, who had swallowed some of the seeds. A violent fever, delirium, tremors in the limbs, and a general eruption on the skin were present, accompanied with considerable swelling, itching and inflammation. Repeated emetics and purgatives, alleviated the disease and brought away some of the seeds. Dilatation of the pupils still remained, but

were obviated by a continuance of the previous remedies, and she recovered.

In the transactions of the College of Physicians of Philadelphia, Dr. Bartram relates, that he was called to a child suddenly seized with idiotcy without fever. The pulse was natural, tongue clean, and no internal function disturbed, excepting that of the brain. The child appeared very happy; talking, laughing, and in constant motion, yet so weak it could not stand or walk, without tottering. He exhibited an emetic, and the seeds of the *thorn-apple* were rejected, after which the child recovered.

"A lady, aged 30, was the subject of intense headache, the pain of which was so intense, as to destroy sleep, and disqualify her for all occupation. It observed periods of three or four hours, with intermissions of from twenty to forty minutes. The digestion was somewhat deranged; the other functions natural. Local and general blood-letting, antimonials, and cinchona had been tried in vain. One grain of extract of Stramonium was given every morning, for four successive days. No relief following, the dose was doubled on the fifth; and in four hours after, all the symptoms of poisoning by Stramonium were developed. The face was of a purple-red colour, and swollen; eyes prominent, pupil dilated; eye-lids half closed, and vision nearly lost; hearing impaired; muscles of the lower jaw, lips, right arm and leg convulsed; left side completely paralyzed, and the intellect singularly disturbed; continual incoherent stammering; weeping, ond other expressions of dreadful suffering; deglutition difficult; abdomen sore; pulse small and frequent; respiration tight and hurried; temperature natural; cold sweats confined to the paralyzed foot. Ten leeches were applied behind the ears; sinapisms to the feet; injections of common salt and vinegar administered; and vinegar and water given internally. An emetic was not prescribed; the symptoms indicative of absorption, proving that the poison was no longer in the intestinal canal. The phenomena now gradually subsided, and the paralyzed limb began to execute slight movements. About midnight there was another but less violent attack, relieved by antispasmodics. Weakness and indistinct articulation only remained; and the headache never recurred. In nine days the patient was perfectly restored.

"The violent operation of the Stramonium is, in this instance, referred by Orfila to some peculiarity of constitution in the patient: since it may be administered commonly, without inconvenience, in a dose double that which produced the violent effects here described. The case occurred in Minorca: and most of the poisonous plants, Orfila observes, possess greater energy in this and similar situations, than in more northern latitudes. And, again, the inhabitants of the south are endued with a peculiar susceptibility, which renders them more sensible to the action of powerful medicines. However it may be, the fact of a general, and very intense head-ache having been speedily removed by Stramonium, is worthy of record."

MORBID APPEARANCES.—The stomachs of animals poisoned with the watery extract of Stramonium, were found by Orfila,

inflamed: and blood was extravasated between the mucous coat, and the one subjacent to it. The lungs were of a deep red, and distended with black and fluid blood. Haller opened a woman, who was poisoned by Stramonium: the cortical part of the brain was full of blood, and there were some coagula in the cavities of the cranium.

Treatment.—The treatment required to counteract the effects of Stramonium is precisely that which has already been advised for the Atropa *Belladonna;* to which it is very closely allied.

Medical Properties and Uses.—Stramonium, like Belladonna, is so powerful in its effects, that it is not very generally employed in this country: and like many other valuable agents, its real utility is depreciated, through the hyperbolical and laudatory strains that have been lavished on it, by its ardent admirers. Baron Störck was the first to recommend it in mania and epilepsy; and like other medicines of the narcotic tribe, it has been found to succeed in some instances, and to fail in many others. Dr. Davy, however, has found it useful in the former, by its allaying irritation, and procuring quiet sleep. And Bergius remarks, "Sæpius ipse," (that is, Wedenberg,) "vidit maniacos in integrum restitutos absque relapsu, ex propinato Extracto Daturæ, per tempus quoddam continuato. Delirium post puerperium sæpe curavi cum Datura, ubi alia fefellerunt."

Dr. Fisher, President of the Massachusetts Medical Society, divides the cases of epilepsy into three kinds; those in which the fits return daily; in which they revive at regular periods, as monthly, or give warning of their approach by previous symptoms; lastly, those in which they do not observe any regular period, and do not give any warning of their approach. In the two first kinds he asserts, that all the cases which came under his care, and which were not very few, had been cured by Stramonium. In those of the third kind, he found it of no benefit whatever. Dr. Arch, of Maryland, confirms his statement, by observing the same distinction in his practice.

Taken in large doses, and the system kept for some time

under its influence, it has afforded decided relief in Tic Doloreux; and in the most severe, and best marked case of spasmodic asthma we ever witnessed, the inspissated juice of Stramonium, brought to its proper consistence, by the spontaneous action of the atmosphere, was given in doses of a quarter of a grain every four hours, and speedily produced relief. It is also said to have been successfully administered in large doses for rabies, by the practitioners of India.

Professor Bigelow's remarks on its effects, when smoked, are so judicious, that we transcribe them from his valuable work :* "Within a few years, the thorn-apple has attracted much notice, both in Europe and in this country, as an efficacious palliative in asthma and some other affections of the lungs, when used by smoking, in the same manner as tobacco. The practice was first suggested by the employment of another species, the *D. ferox*, for similar complaints in the East Indies. An English gentleman having exhausted the stock with which he had been supplied of the oriental plant, was advised by Dr. Sims to have recourse to the common Stramonium as a substitute; and upon trial, experienced the same benefit as he had done from the former species. This instance of success led to further trials, and in a short time several publications appeared, containing cases of great relief, afforded by smoking this plant in the paroxyms of asthma. Many individuals of different ages, habits, and constitutions, had used it with the effect of producing immediate relief, and of terminating the paroxysm in a short time. The efficacy, however, of this medicine was called in question by Dr. Bree, who published in the Medical and Physical Journal a letter, containing the result of a great number of unsuccessful trials of Stramonium, in asthmatic cases. It may be doubted whether any other physician has been so unfortunate in its use as Dr. Bree, since he affirms that not one case, of those under his care, was benefited by it. Certain it is, that in this country, (America,) the thorn-apple is employed with very frequent success by asthmatic patients, and it would not be diffi-

* *American Medical Botany*, vol. i. part i. p. 23.

cult to designate a dozen individuals in Boston and its vicinity, who are in the habit of employing it, with unfailing relief, in the paroxysms of this distressing complaint. The cases, which it is fitted to relieve, are those of pure spasmodic asthma, in which it doubtless acts by its sedative and antispasmodic effects. In those depending upon effusion of serum in the lungs, or upon the presence of exciting causes in the first passages, or elsewhere, requiring to be removed, it must not be expected that remedies of this class can afford benefit. In several cases of plethoric and intemperate people, I have found it fail altogether, and venesection afterwards to give speedy relief." For the purpose of smoking, the leaf should be used instead of the root, as it is less fibrous, and possesses all the virtues of the plant.

Dr. Marcet published the result of his experience with Stramonium, and states that many kinds of diseases of a painful nature were more relieved by it, when taken internally, than by any other narcotic substance; and although it frequently excites nervous sensations that are disagreeable, and somewhat alarming to the patient, yet they did not always occur; and its effects on the bowels are rather relaxing, than astringent. Sometimes it rendered the pulse slower.

"Cataplasms of the fresh leaves bruised have been successfully applied to inflammatory tumours, and for discussing masses of indurated milk in the breasts of nurses; and an ointment made with the powdered leaves, allays the pain of hæmorrhoids."

Dose.—Of the inspissated juice, from half to two or three grains.

Formulæ.—*Tinctura Stramonii.*

℞ Daturæ Stramonii seminum contus: ℥ij.
Spiritûs tenuioris ℥j.
Macera per dies quatuordecim, et cola.

Sir H. Halford recommends this preparation.

℞ Extracti Stramonii ʒj.
Saponis duri ʒij
Acaciæ gummi pulv. ℈j.
Glycyrrhizæ pulv. ℈ij
Mucil. Tragacanth. q. s. ft. Massa in pilulas sexaginta dividenda.—Dosis, una nocte maneque.

Off. Prep.—Extract. Stramonii. L.

Spigelia Marilandica.

SPIGELIA MARILANDICA.

Maryland Worm-grass, or Carolina Pink.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. STELLATÆ, *Lin.* GENTIANÆ, *Juss.* GENTIANEÆ, *De Cand.* GENTIANACEÆ, GENTIANEÆ, *Burn.*

GEN. CHAR. *Corolla* funnel-shaped. *Capsules* twin, 2-celled, many seeded.

SPEC. CHAR. *Stem* four-sided, all the leaves opposite.

Syn.—Periclymeni Virginiani flore coccineo. &c. *Raii. Dendr.* 32.
Lonicera marilandica spicis terminalibus. &c. *Lin. Sp. Pl.* 2. *p.* 249.
Spigelia marilandica, *Sp. Pl. Willd.* 1. 824; *Bot. Mag. t.* 80; *Woodv.* 2. *t.* 105.

BRITISH.—*Indian Pink, Pink-root, Worm-grass, Perennial Worm-grass.*

FOREIGN.—*Spigelie de Maryland*, Fr.; *Spigelia*, Ital; *Nordamerikanische Spigelie*, Ger.; *Unsteetla*, of the Cherokee Indians.

OF this genus, which derives its name from Adrian Spigelius, a distinguished botanist, and Professor of Anatomy and Surgery at Padua, there are besides the *marilandica* but four species; three natives of Brazil and Cayenne, the other of Jamaica. The present species is indigenous in all the southern states of America from Pennsylvania to Georgia and Louisiana; but it will not bear the severity of a northern winter. It grows in rich dry soils, on the borders of woods, and flowers from May to July. It was introduced into this country in 1694.

Spigelia *marilandica* is a low perennial plant, seldom more than eight or nine inches high in this country, but in its native

soil sometimes attaining a height of nearly two feet. The root is horizontal, and consists of a great number of slender fibres, forming together a large bunch. When recent they are of a yellow colour, but become black on keeping. From the root proceed several erect, herbaceous, annual, smooth stems, four sided, and of a reddish purple colour. The leaves are opposite, sessile, ovato-acuminate, entire, and smooth. The stem is terminated by a spike of flowers, ranged on one side of the foot-stalk, and supported on short peduncles. Calyx short, cut into five acute segments; corolla funnel-shaped, of a deep crimson externally, and pink within; having the five segments of the border of a yellow colour, tinged with green; the stamens are five, shorter than the corolla, supporting oblong sagittate anthers; germen superior, ovate; style the length of the corolla, terminated by a long fringed stigma. The capsule is double, two-celled, and contains many seeds.

The dissection which accompanies the plate, shows the corolla cut open; the position of the stamens and pistil; and the germen attached to the calyx. For the drawing we are indebted to Mr. R. Morris, F. L. S. author of "Flora Conspicua."

Qualities and Chemical Properties.—Spigelia is a mucilaginous plant, with a mild and not very disagreeable taste. The infusion and decoction of the root and leaves afford a flocculent precipitate with alcohol. They are discoloured, but not precipitated by silicated potash. They have little sensibility to gelatin, although the tincture is made turbid by it. After the decoction was filtrated from the mucus, which had been coagulated by alcohol, it gave a precipitate with nitrate of mercury, but none with muriate of tin. Sulphate of iron caused a dark green precipitate from the decoction, and but little change in the tincture. No distinct evidence of resin presented itself. A substance, which may perhaps be considered a variety of extractive matter, appears to exist in this plant, as the tincture was affected in nearly the same manner by the salt of tin and mercury above mentioned, as the filtrated decoction. Water may be considered an adequate solvent, for the chief proximate principles of this plant.

M. Feneuille has recently analyzed the leaves and roots of the Spigelia: he finds that

The leaves yield,
- Chlorophylle, mixed with a fatty oil,
- Albumen,
- Nauseous bitter substance,
- Mucus,
- Gallic acid,
- Woody fibre,
- Malate of potass, of lime, &c.

The roots yield,
- Fatty oil,
- Volatile oil,
- Resin, in small quantity,
- Bitter substance,
- Saccharine mucus (*mucoso-sucré*),
- Albumen,
- Gallic acid,
- Woody fibre,
- Malate of potass and of lime,
- Silex,
- Oxide of iron.

The bitter substance is said to be the active part, and to exist in greater abundance in the leaves, than in the root. It is of a brown colour, and taken internally produces vertigo, and a kind of intoxication.

Medical Properties and Uses.—This plant was first used by the Cherokee Indians, as an anthelmintic. Drs. Lining, Garden, and Chambers, first introduced it to notice, and their subsequent experience tended to confirm its utility. The root possesses the greatest activity, and is given in doses of from grs. x. to ʒj two or three times a day. If it prove purgative it is said to be most effective: and should it not, it must be conjoined with cathartics, which prevent the narcotic symptoms, such as stupor, headache, dilated pupils, flushings of the face, and stiffness of the eyelids, that so frequently follow its administration. It is said to be most useful in *lumbrici*; and it is to its acrid narcotic principle, that Dr. Good attributes the vermifuge powers, which it possesses in common with *S. anthelmia*, a native of Jamaica. Notwithstanding what has been advanced

in its favour, we consider it an unnecessary appendage to our materia medica; for independently of its deleterious properties, its real anthelmintic ones are somewhat equivocal. As our pharmacopœia gives no direction for its administration, for the benefit of those who wish to make trials of it, we subjoin the following form:—

℞ Spigeliæ radicis concisæ ℥ß.
Sennæ Foliorum ʒij.
Aurantii corticis concisi.
Santonici seminum contus.
Fœniculi seminum contus. āā ʒj.
Aquæ ferventi ℥xij.

Macera per horas duas in vase leviter clauso, et cola.—Dose, a wine glassful three times a day on an empty stomach.

ÆTHUSA CYNAPIUM.

Lesser Hemlock, or Fool's Parsley.

Class V. PENTANDRIA.—*Order* II. DIGYNIA.

Nat. Ord. UMBELLATÆ, *Lin.* UMBELLIFERÆ, *Juss.*

GEN. CHAR. *Universal involucre* 0; *partial* 3-leaved, pendulous, dimidiate, placed on the outside. *Fruit* ovato-globose, carpels 5-ribbed; ridges elevated, thick, and acutely keeled.

SPEC. CHAR. "*Leaves* uniform; leaflets wedge-shaped, decurrent, with lanceolate segments."—*Smith.*

Syn.—Cicutaria tenuifolia. *Raii. Syn.* 215; *Ger. Em.* 1063. *f.*
Cicutaria apii folio. *Bauh. Hist. v.* 3. *p.* 2. 180. *f.*
Cicutaria fatua. *Lob. Icon. v.* 2. 280. *f.*
Cynapium. *Riv. Pentap. Irr. t.* 76.
Coriandrum Cynapium. *Crantz. Austr.* 111.; *Roth. Germ. v.* 1. 130. *v.* 2. 346.
Æthusa. *n.* 765. *Hall. Hist. v.* 1. 336.
Æthusa Cynapium. *Lin. Sp. Pl.* 367: *Willd. v.* 1. 1446; *Fl. Brit.* 323. *Eng. Bot. v.* 17. *t.* 1192; *Curt. Lond. t.* 18; *Hook. Scot.* 92; *Bull. Fr. t.* 91.

FOREIGN APPELLATIONS.—*La petite Cigue, Fr.*; *Cicuta minore,* Ital.; *Kleiner Schirling,* Ger.

FOOL'S PARSLEY, so called from the deleterious property of the plant, and the resemblance it bears to parsley, for which it is sometimes unfortunately mistaken, is an annual plant, common in gardens and cultivated grounds in every part of Great Britain and Ireland; flowering from June to September. We observed it in profussion last summer, (1826,) in the churchyards of St. George the Martyr, Borough; and St. Martin in the Fields, London.

From a root (*d*) which is slender and spindle-shaped, the stem rises to the height of a foot or more; it is erect, smooth, branched, striated or slightly grooved, hollow, and generally of a dark purple colour at the base, but not spotted. The lower leaves are tri-pinnate, smooth and shining; of a dark green colour, and supported on short sheathing foot-stalks; the upper ones are bi-pinnate: segments ovate-lanceolate, deeply cut, lobed, and more or less decurrent. The umbels are terminal, on longish

peduncles, many rayed, the inner rays becoming gradually shorter; umbellules, small and spreading. The partial involucres consist of three long, linear, pendent leaves, which only half encompass the umbel on the outside. The flowers (*a*) are very small; the petals white, unequal, obcordate, and somewhat radiating; the stamens are five, simple, supporting roundish anthers.(*b*) The germen is beneath the flower, having two reflex styles and obtuse stigmata. The fruit (*c*) is ovate, roundish, deeply grooved, crowned with the styles, and divisible into two parts, each containing a single seed.

This plant, on account of its acrid effects when incautiously admitted into the stomach, derives its generic appellation *Æthusa*, from, αἴθω or αἰθύσσω, Greek words, which signify to burn or to make warm; and the trivial name *Cynapium*, or dog's parsley, was restored to modern nomenclature from the writings of Rivinus, in which it ranks as a genus.

Qualities.—The seeds, when bruised, have a slight disagreeable odour, and a nauseous pungent taste, Alcohol extracts their active matter; which is an alkaloid that crystallizes in rhombic prisms; it is likewise soluble in water, but not in ether.

Distinctive Characters.—Being so abundant a weed in rich garden soils, the *Æ. Cynapium* is frequently mistaken for common parsley; and therefore deserves to have its characters and noxious qualities universally known and exposed. Although it bears a strong resemblance to the garden parsley, it exhibits differences in its botanical characters, by which it may at once be distinguished. The leaves of fools's parsley are finer, more acute, decurrent, of a darker green; and instead of the peculiar parsley smell, have, when bruised, a disagreeable odour. When the flower stem of the fool's parsley appears, the plant is readily distinguished from *all* other umbellate plants, by what is called its *beard*,—three long, pendulous leaves of the involucellum (*e*) under the partial, and no involucrum to the general umbels. The flowers too of the fool's parsley are *white*, those of the garden parsly pale *yellow*. In order to prevent mistakes, it has been recommended to cultivate the *curled* variety of the common parsley only; as it not only possesses the same virtues, but also makes a more elegant garnish.

From Dr. Buckhave,* we have gleaned the following interesting account; by which it will be seen, that it has also been inadvertently used for Conium *maculatum*. From this plant, however, it is essentially distinguished, as well by the inferiority of its size and unspotted stalk, as by the partial *involucres*, already described; this plant having no general involucre, while hemlock has both general and partial.

"A patient, aged 40, being afflicted with carcinomatous ulcerations of the face and neck, Hemlock pills were prescribed; which she took without inconvenience for two months. But no change, for the better, being produced upon the disease, her Physician prescribed the herb of the Hemlock; directing an ounce to be boiled in thirty-two ounces of water; and of the strained liquor, three ounces were ordered to be taken daily, in different portions, for four or five weeks. But during that time, she frequently complained that the draughts excited tremors, vertigo, headache, cholic pains, vomiting, loss of strength and aversion to food. Suspecting that these might proceed from regimen, he directed strict attention to that particular; and advised her to continue the decoction. But being afterwards informed that symptoms still more alarming had taken place, particularly violent vomiting, he was led to examine the plant, and soon found a large proportion of the *Æthusa*. After this, she was furnished with genuine Hemlock; she formed a similar decoction of it, and took it in the same manner, without inconvenience. Under this medicine, the symtoms of the disease gradually decreased, and at the end of eleven months, the ulcerations healed." This author relates, also, two or three others cases of the same kind.

Poisonous Effects.—The subjoined cases more fully illustrate the symptoms this violent poison produces,

"Two ladies of Castle Donnington, Leicestershire, partook of some salad wherein *Æthusa Cynapium* had been put by mistake, with common parsley, for which it had been *grown* and *was gathered*. Symptoms of an alarming kind soon followed, indicative of the full operation of that pernicious vegetable. They were, a troublesome nausea, with occasional vomiting; accompanied with oppressive headache and giddiness; also a strong propensity to slumber, at the same time that *calm* repose was wholly prevented by frequent startings and excessive agitations. The mouth, throat, and stomach, were impressed with the sensation of pungent heat, attended with great difficulty in swallowing. Increased thirst prevailed, with total loss of appetite for every kind of solid aliment. The extremities felt benumbed and were affected with tremors; and all the vital and animal functions were performed with unusual inactivity." The ladies recovered, but no allusion is made to the treatment that was pursued.†

The following relation was communicated to Mr. Curtis, by Mr. Lowe, surgeon, at Preston:—

"On Thursday, the 5th of June, Mr. Frekleton, a healthy, strong

* *Acta Regiæ Societatis Medicæ Hauniensis*, vol. i.

† See the *Medical and Physical Journal*, Vol. XIV. p. 425.

man, about 35 years of age, a publican, ate a handful of fools's parsley with nearly the same quantity of young lettuce, about one o'clock at noon; in about ten minutes he was affected with a pain and hardness in his stomach and bowels, attended with a rumbling. He walked out into the fields, but was seized with such langour, weariness, and weakness, that it was with difficulty he supported himself till he got home; he was much troubled with giddiness in his head, his vision was confused, and sometimes objects appeared double: at seven o'clock he took an emetic, which brought up, he supposes, all the fool's parsley he had eaten, but not any of the lettuce; this considerably relieved him from the uneasy sensations in the bowels, but the other symptoms continued, and he passed a restless night. Next day he had much pain in his head and eyes, which last were inflamed and bloodshot: he had different circumscribed swellings in his face, which were painful and inflamed, but they were transient and flew from place to place; this night he took a powder, which made him sweat profusely. On Saturday his eyes were highly inflamed, painful, and entirely closed by the surrounding inflammation; this day he was bled, which gave him much ease in his head and eyes. From this time until Monday he continued to get better, but had, even then, pain, heat and inflammation in his eyes, with œdematous swellings of his cheeks; his remaining symptoms went off gradually, and he is now well. He had been told that the plant he had eaten was hemlock: to be satisfied, I accompanied him into the garden where he had gathered the plant, and found it to be *Æthusa Cynapium*, or fool's parsley."

M. Vicat relates that a boy six years of age, having eaten this plant at four in the afternoon, which he mistook for parsley, began immediately to utter cries of anguish, and complained of cramps in the stomach: while he was going from the country to his father's house, the whole of his body became excessively swelled, and assumed a livid appearance: his breathing became every moment more difficult, and short; and he died towards midnight. Another child, aged four, was also poisoned by the same plant, and although the contents of his stomach were rejected, he went out of his senses, talked extravagantly, but eventually recovered, by suitable medical assistance.

"Orfila found that six ounces of the juice, when retained in the stomach of a dog by a ligature, caused convulsions and stupor, and death in an hour." (*Christison.*)

Morbid Appearances.—Riviere informs us, p. 255, that in a person who died after having taken this plant, "the tongue was black; a brownish serosity was found in the stomach; the liver was hard, and of a yellow colour; the spleen livid; but the body was not at all emphysematous."

Treatment.—Emetics and purgatives should be administered, and as soon as the poison is evacuated, vinegar and the citric or other vegetable acids. Should stupor remain, apply cold affusions to the head, or bleed from the jugular vein: apply friction to the body, and sinapisms to the feet: and during the cure, give small doses of sulphate of magnesia, dissolved in almond emulsion.

HYOSCYAMUS NIGER.

Common Henbane.

Class V. PENTANDRIA.—*Ord.* I. MONOGYNIA.

Nat. Ord. LURIDÆ, *Linn.* SOLANEÆ, *Juss.* SOLANEÆ, *De Candolle*, SOLANACEÆ, SOLANEÆ, *Burn.*

GEN. CHAR. *Calyx* tubular, 5-cleft. *Coralla*, funnel-shaped, the lobes obtuse. *Stigma*, capitate. *Capsule*, covered with a lid, 2-celled.

SPEC. CHAR. *Leaves* sinuate, amplexicaul; *flowers* nearly sessile.

Syn.—Hyoscyamus vulgaris. *Raii. Syn.* 274. 1.
Hyoscyamus. *Hall. Hist. v.* 1. 254. *Brunsf. Herb. v.* 1. 224. *Camer. Epit.* 807. *f.* *Matth. Valgr. v.* 2. 410. *f.*
Hyoscyamus niger vel. vulgaris. *Park. Theatr.* 363.
Hyoscyamus lethalis. *Salisb. Prodr.* 131.
Hyoscyamus flavus. *Fuchs. Hist.* 833. *f.*
Hyoscyamus niger. *Lin. Sp. Pl.* 257. *Willd. v.* 1. 1010. *Fl. Brit.* 254. *Ger. Em.* 353. *f.*; *Eng. Bot. v.* 9. *t.* 591; *Hook. Scot.* 78.; *Woodv. Med. Bot. t.* 52; *Bull. Fr. t.* 93.
FOREIGN.—*Jusquiame, ou hanebane potelée*, Fr.; *Bilsenkraut*, Ger.; *Giusquiamo, Fava porcina*, It.; *Beleno, Veleno*, Sp.; *Miemendro, Yosciamo*, Port.; *Honsebane*, Dan.; *Bolmort, Honsable*, Swed.; Arab.

COMMON HENBANE is an annual plant, growing naturally in many parts of our island, on waste grounds, and particularly on dry calcareous soils, on the sea coast of Essex and Kent; flowering in July. The figure was drawn from a specimen found on Barnes Common, the only locality in the immediate vicinity of the metropolis with which we are now acquainted: we have seen it at Hampstead, but it has been for several years extirpated,

the London herb-shops being chiefly supplied with it from Birch, near Colchester, and the Isle of Thanet, where it grows in great abundance. Mr. Greville, in his "Flora Edinensis," on the authority of Mr. Neill, mentions it as occurring at Lochend, and on the south-east end of the debris of Salisbury Craigs.

The root is fusiform, long, thick, wrinkled, brown externally, and white within. The stem rises to the height of two feet; is erect, branched, woody, cylindrical, somewhat viscid, and covered with a hairy down. The leaves surrounding the stalk at their base, stand irregularly, or in alternate order; are large, clammy like the stalks, soft, woolly, pointed at the ends, very deeply sinuated at the edges, and of a glaucous green colour. The flowers are numerous, mostly sessile, of a straw-yellow colour, reticulated with dark purple veins; and either emerge singly from the axillæ of the leaves, or form long drooping, unilateral spikes, at the extremity of the stem and branches. A variety without these veins is mentioned by Sir J. E. Smith, as having been found by the Rev. J. Forby, at Fincham, in Norfolk. The corolla is gamopetalous, funnel-shaped, and divided into five obtuse segments. The calyx is tubular, 5-cleft, and remains till the fruit be ripe. The filaments are inserted into the tube of the corolla, downy at the base, subulated, inclined inwards, and supporting heart-shaped anthers of a deep purple colour. The germen is roundish; style filiform, the length of the stamens, with a blunt round stigma. The capsule is ovate, filling the body of the calyx; bilocular, and opening transversely by a convex lid. It contains numerous, small, obovate, unequal brown seeds. The whole plant is covered with soft, unctuous hairs. Fig. (*a*) represents the calyx; (*b*) the corolla, with the stamens and anthers; (*c*) the germen and style; (*d*) the capsule, with its lid.

The systematic name, *Hyoscyamus*, is of Greek origin, and is derived from *ὑς, ὑος, sus*, and *κύαμος, faba*, a bean, Hogs-Bean: because the exterior of the capsule has some resemblance to the shape of a bean, and the herb may be eaten by swine with impunity: whereas to most other animals it proves poisonous. Ælian, however, relates that if this plant be devoured by pigs,

its effects are extremely prejudicial, occasioning convulsions, and even death. The trivial name *niger* (black) is expressive of the colour of the seeds, and serves to distinguish the present species from another kind of European Henbane with white seeds, and which for that reason is termed Hyoscyamus *albus*. The English name Henbane, seems to be derived from the effects of the seeds on fowls; *Bana*, being the Saxon word for murdering, slaying, &c.; thus the plant is the destroyer, or *bane*, of hens. Matthiolus, in his Commentaries on Dioscorides, asserts that he was a witness to the effects of the seeds on children, and that birds, especially of the gallinaceous tribe, and fishes, die soon after eating them.

Qualities and Chemical Properties.—The whole plant has a strong fetid narcotic smell, and abounds in a clammy juice of a similar odour. The root has a sweetish taste, which has caused it to be sometimes mistaken for that of the parsnip. Exsiccation is said to destroy these sensible qualities. "Its virtues are completely extracted by diluted alcohol. The watery infusion is of a very pale yellow colour, and insipid; and has the narcotic odour of the plant. It is not altered by the acids; the alkalies change the colour to a deep greenish yellow, which, on the addition of an acid, disappears, and a brownish flocculent precipitate is produced. Copious white precipitates are produced by the solution of subacetate of lead; and black ones by nitrate of silver. Sulphate of iron strikes with it a pale olive colour, and a dark precipitate is slowly formed."* Nitrate of mercury also produces a large precipitate; the watery and alcoholic solutions do not disturb each other. Brandes has succeeded in extracting from the *seeds* an alkaline principle, termed *hyoscyamine*, on which its active properties depend; its vapour is exceedingly prejudicial.†

* Thomson.

† The seeds of Hyoscyamus *niger* furnished to M. Brandes:—Fixed oil, readily soluble in spirit of wine, 19.6; fixed oil, *not* readily soluble in spirit of wine, 4.6; fatty substance analogous to cetine 1.4; malate of *hyoscyamine*, with malates of lime and magnesia, and an ammoniacal salt, 6.3; uncrystallizable sugar, a trace; gum 1.2; bassarine 2.4; fecula 1.5; woody fibre 26; phyteumacolle 3.4; soluble

Poisonous Effects and Morbid Appearances.—Henbane, when administered in too large a dose, becomes a very dangerous poison. The effects produced by this plant, besides madness, are symptoms of intoxication, stupor, remarkable dilatation of the pupil, apoplexy, and convulsions; terminating in death. On dissection, the internal surface of the stomach is often found inflamed, and covered with gangrenous spots; the brain also exhibits appearances denoting great vascular excitement.

"Wepfer relates, that several monks made a repast on the roots of wild endive, among which were mixed by mistake two roots of henbane. In a few hours some experienced vertigo; others a burning of the tongue, lips, and throat. Severe pains were also felt in the iliac region, and in all the joints. The intellectual faculties and organs of vision were perverted, and they gave themselves up to actions that were mad and ridiculous. They however recovered. In other cases a haggard countenance, dilatation of the pupils, difficulty of breathing, small and intermittent pulse, loss of speech, trismus, and temporary loss of intellect, have been the principle symptoms; while the extremities have been observed to be cold, and nearly paralyzed. A clyster, prepared from a decoction of henbane, caused a numbness and loss of motion of the upper and lower extremities, propensity to sleep, and difficulty of hearing."—*Orfila*, vol. II. p. 135 to 139. *Fcderé*, vol. IV. p. 25.

"Its effects in large doses have been well described by M. Cloquet, as they occured in two soldiers who ate the young shoots dressed with olive oil. They presently became giddy and stupid, lost their speech, and had a dull haggard look. The pupils were excessively dilated, and the eyes so insensible that the eye-lids did not wink when the cornea was touched. The pulse was small and intermitting, the breathing difficult, the jaw locked, and the mouth distorted by *risus sardonicus*. Sensibility was extinct, the limbs were cold and palsied, the arms convulsed, and there was that singular union of delirium and coma which is usually termed *typhomania*. One of the men soon vomited freely under the influence of emetics, and in a short time got quite well. The other vomited little. As the palsy and somnolency abated, the delirium became extravagant, and the patient quite unmanageable till the evening of the subsequent day, when the operation of brisk purgatives restored him to his senses. In two days both were fit for duty." *Christison from Corvisart.*

"Wilmer gives an interesting account of six persons poisoned by eating the roots of henbane in mistake for parsnips. Several were delirious and danced about like maniacs; one appeared as if he had got drunk, and a woman became profoundly and irrecoverably comatose. Emetics could not be introduced into the stomach, stimulant clysters had no effect,

albumen 0.8; hard albumen 3.7; malate, (sulphate?) and sulphate of potass 0.4; malate of lime 0.4; malate of magnesia 0.2; phosphates of lime and magnesia 2.4; water 24.1: excess 1.4. The ashes contained—carbonate, phosphate, sulphate? and hydrochlorate of potass; carbonate, and much phosphate of lime; much silica, manganese, and iron, and a very little copper.—Majendie's Formulary. p. 221.

external stimuli of every kind failed to rouse her, and she expired next morning at six." *Ib.*

"Dr. Patouillat, of Toucy, in France, saw nine persons who were poisoned with this root. Some were speechless and convulsive; others occasionally howled. In all there was a protrusion of the eyes, contortion of the mouth, and delirium. Emetics relieved them, but their sight was for some days affected, and all objects appeared red, like scarlet."—*Phil. Transact.* vol. XL. p. 446.

The vapours of this plant have been lately used by Hufeland in nervous affections. When exposed to this, even though precautions were taken to prevent the fumes from reaching the face, profuse perspirations ensued: with a sense of fullness in the head, and sometimes tremors, difficult respiration, and vertigo. Boerhaave also experienced a trembling and drunkenness, while preparing a plaster into the composition of which henbane entered. On animals, the juice and decoction of the root produced lethargic effects, but very seldom any giddiness or convulsions. When applied to the cellular texture, death ensued sooner; and vomiting occurred in one case: but generally the comatose symptoms were all that were observed. No inflammation was noticed in the stomach; the lungs were occasionally livid, and black blood was observed in the heart. Horses, goats, sheep, and swine, are said to eat it with impunity.

Hyoscyamus *aureus*, *physaloides*, and *Scopolia*, are all deemed to be poisonous: and the following account is illustrative of the effects of H. *albus*.

"In April 1792, a large quantity was carried by mistake on board the French corvette La Sardine, which the sailors had gathered in one of the isles of Sapienzi, in the Morea. A part of it was put into the ship's copper, and the remainder into those of some of the subaltern officers. At four o'clock they all dined. In a short time, vertigo, vomiting, convulsions, gripes, and purging, were generally experienced: and when Dr. Picard, the surgeon, came on board, he observed the gunner making a thousand grimaces and contortions. By keeping up the evacuations, most of them recovered; but those in whom there were none, remained for some time in a sickly condition."—*Foderè*, vol. IV. p. 23.

Treatment.—When henbane is taken in an over dose, the effects are decidedly *narcotic*; and the same treatment is required that we have recommended for Atropa *Belladonna*.

Medical Properties and Uses.—Henbane is one of our most valuable narcotics. The principal use which is made of it, is as a substitute for opium, when the latter disagrees, or is contra-indicated by particular symptoms. It appears to be free from the constipating qualities of opium, especially if exhibited in large doses. Like digitalis and other narcotics, it often operates as a diuretic, and sometimes increases the cuticular dis-

discharge. In moderate doses it acts as a powerful sedative, diminishing excess of irritability; induces sleep, relieves chronic and anomalous pains of the abdominal viscera, and is employed, with singular advantage, in irritative conditions of the kidneys, bladder, and urethra. Conjoined with purgatives, it does not impede their operation; and is therefore frequently prescribed with colocynth and other drastic purgatives, where the bowels are irritable, and where it is necessary to increase their secretions. It is occasionally substituted for Belladonna, to cause dilatation of the pupil, prior to the operation for cataract; and it acts much more mildly. The seeds are less active than other parts of the plant, and may be eaten in small quantities without danger; their efficacy in relieving tooth-ache, when smoked, is generally acknowledged. Colica pictonum, hysteria, rheumatism, gout, palpitation of the heart, and chordee, are complaints for which henbane is often recommended: while the bruised leaves have been advantageously used as an external application, in the form of cataplasm, to scrophulous and cancerous ulcers, hæmorrhoids, and other painful diseases. But as in some cases it produces unpleasant symptoms, and sleep, which is laborious and unrefreshing, "it is generally resorted to more as a secondary medicine than one which we may confidently apply at first, with reliance on its anodyne effects."

The properties of the seeds would appear to differ from those of the leaves and root; adding some of the symptoms of irritant to those of narcotic poisons, for in several cases persons who have taken the seeds have suffered from convulsions, heat, and dryness in the throat, burning in the stomach, great thirst and delirium; this may probably account for the occasional unpleasant effects that follow the exhibition of extract, in which perhaps the seeds have been carelessly mixed with the leaves.

Dose. The dose of the extract may be from grs. v. to ℈j; of the tincture from gtt. xx. to ʒj.

Off. Prep. Extractum Hyoscyami, *L. E. D.* Tinctura Hyoscyami, *L. E. D.*

X

ŒNANTHE PHELLANDRIUM.

Fine-leaved Water Hemlock.

Class V. PENTANDRIA.—*Order* II. DIGYNIA.

Nat. Ord. UMBELLATÆ, *Lin.* UMBELLIFERÆ, *Juss.* UMBELLINÆ, UMBELLACEÆ, *Burn.*

GEN. CHAR. *Calyx* 5-toothed. *Petals* obcordate with the points inflexed. *Fruit* subterate, crowned with the straight styles. *Carpels* with five blunt convex ridges, of which the side ones are marginal. Channels with single vittæ. *Seed* convex, taper: axis abortive.

SPEC. CHAR. *Leaflets*, with narrow, wedge-shaped, cut, divaricated segments. *Fruit* ovate, with five ribs.

Syn.—Phellandrium. *Dod. Pempt.* 591; *Rivin. Pentap. Irr. t.* 65; *Hall. Hist. v.* 1. 332.

Phellandrium vel Cicutaria aquatica quorundam. *Raii. Syn.* 215; *Bauh. Hist. v.* 3. 183.

Cicutaria palustris. *Ger. Em.* 1063. *f.*; *Lob. Icon.* 735. *f.*; *Park.* 933.

Œnanthe Phellandrium. *Spreng. Prodr.* 37; *Smith Eng. Fl. v.* 2. *p.* 72.

Ligusticum Phellandrium. *Crantz. Fl. Austr. fasc.* 3. 84.

Phellandrium aquaticum. *Lin. Sp. Pl.* 366; *Willd. v.* 1. 1444; *Fl. Br.* 321; *Eng. Bot. v.* 10. *t.* 684; *Hook. Scot.* 92.

THIS is an indigenous biennial plant, found growing in ditches and rivers; but not very common. We found it in great abundance in a pond at Kentish town, and in a deep ditch at Battersea, associated with the elegant Butomus *umbellatus*, Lythrum *Salicaria*, and other aquatics. It flowers in July and August.

From a jointed root-stake, the fibres from which grow in whorls, proceeds an erect, hollow, smooth, furrowed stem, of a yellowish green colour, and very thick at the lower part, with diverging branches, to the height of three or four feet. The leaves are large, spreading, smooth, dark, shining green, tripin-

nate and finely divided. The umbles are many rayed, axillary, and opposite to the leaves. The flowers are small, white, formed into umbels, which in the species now under consideration, have a partial involucrum, composed of many lanceolate small leaves; petals equal, obcordate; calyx 5-leaved. The filaments are five, longer than the corolla, and supporting roundish anthers. The germen is inferior, oblong, with two styles, and obtuse stigmata. The fruit is ovate, smooth, striated, and splits into two akenia, each containing one small seed. The old genus *Phellandrium* is now allied to *Œnanthe*; from which it differs only in the absence of a general involucre, and in having all the florets fertile, and not radiate. Fig. (*a*) represents the corolla, stamens, &c.; (*b*) a back view of the corolla, showing the calyx; (*c*) the germen and styles, with the stamens and anthers; (*d*) the fruit.

The origin of the generical name *Phellandrium* is involved in considerable obscurity. It is usually derived from φελλὸς, cork, and ανηρ, a man; but as this etymology throws no light on the meaning of the term, we agree with a modern author, in supposing it to be derived from φῆλος, an impostor, or φηλέω, to deceive, in allusion to the noxious qualities of the herb, and its resemblance to some that are wholesome.

Qualities.—The whole plant has a heavy, disagreeable smell; the seeds (which are the parts that have been used in medicine) have an aromatic odour, and a moderately pungent taste, resembling those of fennel. Distilled with water, they yield an essential oil, of a pale yellow colour, and a strong penetrating smell, One pound affords an ounce of watery, and nearly double this quantity of spirituous extract, of which more than three drachms consist of resin.

Medical Properties and Uses.—The seeds of phellandrium *aquaticum*, or, as it is now called, Œnanthe Phellandrium, are carminative, narcotic, and diuretic. They have been much recommended on the continent in pulmonary consumption; and many cases are recorded, in which the disease, if not cured, was evidently relieved by them.

Dr. Selig narrates a case of a young unmarried woman, whose

mother died consumptive. She laboured under cough, dyspnœa, purulent expectoration, pain in the chest, and fever in the afternoon.

It ought to be remarked, that during four weeks, in which Dr. Selig exhibited various pectoral and febrifuge medicines, the cough, fever, and pains in the chest were much abated; but the expectoration continued, and was offensive by its smell. He then ordered the water-hemlock, with nitre and gum arabic; and strongly urged his patient to permit a seton to be inserted between the shoulders; which she would not submit to. In fourteen days she recovered astonishingly. There were, now, scarcely any remains of fever, and the cough and purulent expectoration were greatly diminished. Her strength and spirits returned. But as the doctor still insisted on the propriety of introducing a seton, and as her terrors at the remedy were great, she abandoned him and his medicine. She then began to grow worse, and in a few months after again sent for him: but the disease was too far advanced to leave any room for hope, and she died some months afterwards.

The second case is more interesting. It is that of a youth of thirteen years of age, who had all the symptoms of phthisis pulmonalis; and who was completely cured by means of the *Semina Phellandrii aquatici*, which he took for two months, without interruption.

There is a note added to this case by Dr. Hufeland, the editor of the journal from which this account has been translated, where he says, that he also derived great benefit from the same remedy.

Dr. Hargens, of Kiel, likewise states that it relieves consumptive symptoms; and as it is a native of our own country, we wish to direct the attention of British practitioners to it, as a remedy worthy of trial, and one that can be readily obtained. Should any one be disposed to make use of it, it ought to be borne in mind that those of the *umbelliferous* plants which are possessed of active narcotic properties, possess them in an increasing ratio, with their moist or shady situations.

The seeds also were employed by the ancients in calculous

complaints; and have been highly extolled by Heister, Ernsling, and others among the moderns, as possessing valuable diuretic, antiseptic, and expectorant powers. When taken in large doses, they appear to produce, though not very actively, the ordinary effects of the narcotic poisons; and on this account we have thought proper to figure the plant in our work. Wepfer has related several cases of poisoning by it; but it appears probable that the Cicuta *virosa* was mistaken for it. Linneus asserts that the horses in Sweden are seized with palsy by feeding on the Water-Hemlock; but that its noxious qualities are attributable to the larva of a small coleopterous insect, *Curculio paraplecticus*, *L.* (*Lixus paraplecticus*, of Fabricius and Latreille,) which is found in its stalks. The effects respecting this insect are now admitted to be fabulous.*

Dose.—Of the powdered seeds, from gr. xv. to ʒß and upwards.

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* Linn. *It. Scan.* 182. De Geer, *Mém. pour servir à l'hist. des insectes.* v. 227-30.

HELLEBORUS NIGER.

Black Hellebore.

Class XIII. POLYANDRIA.—*Order* VI. POLYGYNIA.

Nat. Ord. MULTISILIQUÆ, *Lin.* RANUNCULACEÆ, *Juss.*
RANUNCULACEÆ, HELLEBOREÆ, *De Cand. &c.*

GEN. CHAR. *Calyx* permanent, pentasepalous. *Petals* eight or more, bilabiate, tubular. *Capsules* many-seeded, sessile nearly erect, coriaceous.

SPEC. CHAR. *Leaves* pedate. *Flower stalks* radical, one or two flowered. *Bracteæ* ovatè.

Syn.—Helleborus niger, flore roseo. *Bauh. Pin.* 186.
Helleborus niger verus. *Ger. Em.* 796; *Park. Theatr.* 212; *Raii. Hist.* 697.
Elleborus niger legitimus. *Clus. Hist.* i. 274.
Helleborus niger. *Lin. Sp. Pl.* 783; *Willd. v.* 2. 1335.
; *Elleboro negro*, Ital. ; .
d, Arab.

BLACK HELLEBORE, so called from the dark colour of the root, is a perennial plant, growing spontaneously on the rocky and woody mountains of many parts of Europe, especially in Austria, Carniolia, Italy, and Greece, and cultivated in our gardens as an ornamental plant, flowering in mild seasons, from December till March, whence it has obtained the name of Christmas rose. The date of its introduction is unknown; but it appears to have been cultivated in Britain by Gerarde as early as 1596. The name Hellebore, from Helleborus, ἑλλέβορος, is said to be derived from ἕλειν, to slay, and βορα, food, in allusion to the poisonous properties of the plant. In the older editions of our dispensatories, it is termed "Melampodium,"* and was formerly supposed to be the true

* Melampodium appellatur, quoniam capraram [illegible] Melampus nomine, furentes Proti filias eo primus purgasse, et sanasse creditur. Folia et viridia [illegible]

ἑλλεβορος μελας of Dioscorides, till it was discovered to be a distinct species by Tournefort, growing plentifully on Mount Athos, Delphi, and the Bythnian Olympus, as well as on the hills near Thessalonia: and by Dr. Sibthorp, in the neighbourhood of Constantinople. Anticyra, now Asprospizzia, a city in Phocis, situated near Mount Oeta, was famous among the ancients for the Hellebore which it produced; it was of the best quality, and reckoned a specific for many diseases, particularly for insanity; hence arose the proverb, "Naviget Anticyram," send the madman a voyage to Anticyra. Thus the Roman poet:—

> Danda est ellebori multo pars maxima avaris:
> Nescio an Antycyram ratio illis destinet omnem.
> Hor. Sat. iii. lib. ii.

"By far the largest portion of Hellebore is to be administered to the covetous: I know not whether reason does not consign all Anticyra for their use."

The root, which is the part used in medicine, consists of numerous depending fibres, issuing from a rough transverse knotty head, externally of a blackish colour, internally white or yellowish. The leaves are large, composed of five, six, or more leaflets of a deep green colour, and spring directly from the root on long cylindrical petioles, smooth, and dotted with red; the leaflets are ovate-lanceolate, smooth, shining, and coriaceous, with the distal, half of each slightly serrated. The flower-stalk is a scape, six or eight inches long, erect, round, variegated with red, and supporting one or two flowers. The bracteas, or floral leaves, are ovate and indented at the edges. The calyx consists of five large, roundish concave sepals, at first white, or of a pale rose colour, deepening by age, and finally becoming green, after the impregnation of the seed. The petals are tubular, and two lipped. The filaments are numerous, form 30 to 60 in number, capillary, and supporting yellow anthers.

similia, sed minora, foliis sphondylii pectinata, pluribus divisuris scissa, nigriora, et subaspera; caulis brevis; flores candidi purpurascentes, figura racemosa; semen intus Cnici. . . . Radices subeunt tenues, nigræ, velut e capitulo quodam . . . . . um. In asperis, editioribus, aitienti- . . . . . arnosum, plenum cui tenuis medulla sit, acre denique gustu, fervensque.—Dioscorid. l. 4. c. 151. p. 297.

The germens, about six or eight in number, become pods, containing many black shining seeds.

Adulterations.—It appears that the merchants of Frankfort and of Hamburgh frequently substitute the roots of the Aconitum *neomontanum*, Adonis *vernalis*, Helleborus *viridis*, Trollius *europæus*, Actæa *spicata*, and some other plants, for those of Helleborus *niger*; but these may in general be distinguished by their paler colour.

Qualities and Chemical Properties.—The fibres of the roots, which are the parts employed, are of the size of a small quill; corrugated; of a colour approaching to black on the outside; and of a yellowish white within. Their odour is disagreeable. Both the virtues and properties of the root are impaired by keeping:* but when fresh, their taste is penetrating; and though neither bitter nor very hot, it leaves a lasting impression in the mouth; and has a remarkable effect on the tongue, as observed long ago by Grew, in his work on Tastes. "The root being chewed, and for some time retained upon the tongue, after a few minutes it seemeth to be benumbed, and affected with a kind of paralytic stupor; or as when it hath been a little burnt with eating or supping any thing too hot." M. M. Feneulle and Capron have lately analysed the root, but were unable to discover any alkali in its active principle, similar to that which is yielded by the white Hellebore: a plant, however, that belongs to a very different order, notwithstanding the similarity of the common name. The following are its constituents, viz. a volatile oil, a fatty matter, a resin, wax, a volatile acid, a bitter principle, mucus, alumina, gallate of potash, acidulous gallate of lime, and a salt, with an ammoniacal base. Alcohol appears to extract its virtues most efficiently; from which it would appear, that they depend principally on its resinous part. A watery extract, also, possesses both its purgative and diuretic qualities: and its irritating properties are considerably lessened by boiling.

Newman procured from 2880 grains, 380 alcoholic and 181

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* Virtus: rec. venenata, rubefaciens, vesicans; *recenter siccatæ*: emetica, purgans, emmenagoga, antiphthiriaca, sternutatoria; *diu conservatæ*: vix purgans, alterans, diuretica.—Burgiu's *Mat. Med.* v. 2. p. 496.

watery extract; and on reversing the experiment 362 watery, and 181 alcoholic.

From the experiments of Feneulle and Capron, as detailed in the Journal de Pharmacie, (vii. 503,) it would seem, that the active and deleterious principle of the Hellebores is an acid contained in the oily matter. Both the Helleborus viridis and hyemalis possess similar properties to the Helleborus Niger, only in a less degree; but the Helleborus fœtidus is more potent than either.

Poisonous Effects and Morbid Appearances.—That Hellebore is a violently *acrid poison*, the subjoined accounts will prove.

Experiments on animals have shown, that when administered in doses of two or three drachms to dogs, death ensues in the course of sixteen or eighteen hours. Smaller animals are killed by its exhibition in much less time: for example, ten grains of the extract introduced into the windpipe of a rabbit destroyed life in six minutes. But with this, as with many other poisons, the effects are greater when applied to serous surfaces and inserted into wounds, than when taken into the stomach.

"Six grains of powdered hellebore were sprinkled over a wound made in the interior of the thigh of a small young dog. There were no visible symptoms at the expiration of eight hours. The next day, twenty hours after the operation, the animal was lying down upon his side, and in a state of great dejection; he was quite sensible to external impressions: he could be moved like an inert mass of matter, and could not by any means keep himself on his legs. He died three hours after. No sensible lesion was perceived in the digestive canal, or in the lungs."—*Orfila.*

Morgagni has recorded a case in which although but half a drachm of the extract was taken, it had a fatal termination in sixteen hours. The post mortem examination showed inflammation of the digestive canal, especially of the large intestines; and similar appearances were found in two cases in which this plant had been administered, through the presumptuous ignorance of a quack-doctor. The chief facts are as follows:—as communicated by M. Ferary to the Societé Medicale d'Emulation at Paris.

"Two persons took a decoction of this root in cyder. Three quarters of an hour after taking it, alarming symptoms were developed, without exciting suspicion of the real cause. One of the men, therefore, took another dose, when vomiting, delirium, horrible contortions, accompanied with immediate coldness supervened, and death at last ensued. On dissection, sixteen hours afterwards, the appearances in

each were found precisely similar, except that in the one who took the largest quantity they were more strongly marked. The lungs were gorged with blood. The mucous membrane of the stomach was considerably inflamed, of a blackish brown colour, and reduced almost to a gangrenous state. The œsophagus and intestines were natural."*

In some cases the stomach and intestines, but particularly the *rectum*, are highly inflamed,—a circumstance which will be observed in those who have died from taking the Colchicum *autumnale*, that thus, in its poisonous effects, very much resembles black hellebore. Slight congestions have also been noticed in the lungs, and the bladder has been observed to be red and thickened.

"A man, who appeared to be nearly fifty years old, being in the hospital on account of melancholia, was about to depart, when he took some extract of black hellebore, by which he was considerably purged. In the beginning of the night, at the seventh or eighth hour after taking it, he was attacked with vomitings and pains of the abdomen, which were allayed by warm broth. About the fifth hour of the night, those affections returned, and again appeared to be relieved. He lay down an hour afterwards, having vomited two or three spoonsful of a greenish matter. So quietly did he then rest, that none of the patients in the nearest beds heard him; but at the eighth hour, they were attracted to his bedside by a peculiar noise from his mouth; and found him dead. He had taken about half a drachm of the extract; a quantity which had been administered to others with impunity. He had, however, neglected to drink copiously of whey; a precaution it was customary to recommend.

"Thirty hours after death the body was inspected. The limbs were neither rigid nor contracted. In some places, even externally, the stomach and intestines were inflamed: and the intestinum ileum was contracted in some parts, and dilated in others. Internally, the stomach, with the adjacent parts of the œsophagus, was partially inflamed: the intestines were likewise inflamed, but the inflammation was not violent in either part. The spleen was somewhat larger than natural, and so flabby, that the inner substance was almost fluid. The bile contained in the gall bladder was of a pale green colour. A little bloody fluid escaped from the cranium, when it was cut into. There was but little blood in the sinuses of the dura mater, or in the larger vessels which ramify through the pia mater. The whole cerebrum was soft."†

TREATMENT.—According to the experiments of Orfila, the poisonous qualities of Hellebore are absorbed, and act much more rapidly when applied to the cellular texture of the thigh, than when introduced into the stomach. Hellebore, he says, occasions a remarkable stupefaction, which will be combated by an infusion of coffee and camphor in small doses, frequently repeated: and if these medicines are thrown up in a short time after their ingestion, they must be used in injections, and by frictions. Inflammation he recommends to be combated by emollient drinks: and

* Beck's *Elements of Medical Jurisprudence*, p. 514.
† Morgagni, *De Sed. Morb.* l. ix. 15.

emetics are only to be resorted to when vomiting has not been copiously excited by the poison: and this last advice applies to all other poisons of the *acrid* class. When called to a patient suffering from the effects of hellebore, the indications to be fulfilled are, either to produce or encourage vomiting. Coffee, in which gum acacia might be dissolved, should then be given, and after this, small doses of laudanum might be administered, conjoined with Epsom salts and almond emulsion: and the latter might form the common drink for an indefinite period. To relieve delirium, or inflammation of the stomach, bleeding generally, or by leeches, might be advantageously employed; and the general antiphlogistic treatment persisted in. The same mode of treatment is required in cases of poisoning by Elaterium, Gamboge, Colocynth, the fresh roots of Arum, the different species of Rhus, Dephinium, Colchicum, Oenanthe *crocata* and *fistulosa*, several species of Ranunculus, the Euphorbiæ, and many other acrid vegetable poisons.

Medical Properties and Uses.—Before the grand discoveries which chemistry has made on the properties of metallic substances, the most violent vegetable medicines were boldly administered, and this plant has been highly extolled by Avicenna, Gesner, Klien, Milman, and others, in mania, dropsy, cutaneous diseases, and worms. As an emmenagogue, it is occasionally given with success; but this property, as well as its hydragogue virtues, are reasonably supposed to depend on its powerful cathartic effects: effects which it sometimes exerts so violently, as to be seldom prescribed; and were it expunged from the list of our materia medica, we could easily fill up the vacancy by indigenous plants of greater utility. The slender fibres of the root only are used. To produce its full effect as a purgative, the dose should be from ten grains to a scruple; but it is very seldom prescribed in substance. The most common form is that of decoction, made with two drachms of the root to a pint of water. Of this an ounce or more is given every three or four hours. The extract which is made by evaporating the decoction to a due consistence, is the basis of Bacher's celebrated hydragogue pills, composed of extract of black hellebore, myrrh, and powdered carduus benedictus, in the proportion of half a drachm of the first two ingredients, and five grains of the last, beat into a mass, and made into pills, each weighing a single grain. These pills, which formerly obtained a place in our Pharmacopœias, in doses from one to six, three or four times a day, were strongly recommended on the continent in dropsical cases, and were believed to unite an evacuant and tonic power. Hence they were supposed particularly adapted to those cases where general debility and relaxation of the system occur. Under the hands of their inventor, they acquired so great reputation, that after a trial in the military hospitals of Paris, the receipt was purchased by the French king, and published by authority. But like many other nostrums, since their composition became known, Bacher's pill has by no means supported the reputation which it had when kept a secret.

Dose.—The dose of extract is from grs. iij. to ℈j; of the tincture from gtt. xxx. to ʒj. every six hours, in a mucilaginous vehicle.

Off. Prep. Extractum Hellebori Nigri, E. D. Tinctura Hellebori Nigri, L. E. D. *olim*, Tinctura Melampodii.

LACTUCA VIROSA.

Strong-scented Lettuce.

Class XIX. SYNGENESIA.—*Order* I. POLYGAMIA ÆQUALIS.

Nat. Ord. COMPOS. SEMIFLOSC. *Lin.* CICHORACEÆ, *Juss. De Cand. &c.*

GEN. CHAR. *Receptacle* naked. *Involucre* or common *calyx* imbricated, cylindrical; its scales membranaceous at their margins. *Pappus* simple, stipitate.

SPEC. CHAR. *Leaves* patent, oblong toothed, two-eared, and amplexicaule; the keel prickly: flowers panicled.

Syn.—Lactuca sylvestris, odore opii. *Raii Syn.* 161; *Ger. Em.* 309. *f.*
Lactuca. n. 15. *Hall. Hist. v.* 1. 7.
Lactuca agrestis. *Cord. Hist.* 157. 2. *f.*; *Lob. Ic.* 241. *f.*
Lactuca virosa. *Lin. Sp. Pl.* 1119; *Willd. v.* 3. 1523; *Eng. Bot. v.* 28. *t.* 1957.
FOREIGN.—*Laitue vireuse*, Fr.; *Lattuca Salvatica*, It.; *Wilder Lattich*, Ger.

THIS is a biennial plant; a native of Britain, and other parts of Europe; occurring chiefly in dry warm hedges, and waste grounds, where the soil is calcareous. We perceived it in the hedges about Kilburn, on the road to Harrow; in Maiden-lane, near Copenhagen House; at Kingston-bottom; near Coombe Wood, Surrey, and other places near London.

The stem is somewhat woody, rising from two to six feet high; it is erect, slender, very slightly prickly below, smooth above, round, panicled, and thinly clothed with leaves. The leaves are alternate, glabrous, toothed, undivided at the base, and spreading; the cauline ones amplexicaul, sinuate, sometimes lobed, with the midrib armed with short spines on the

under side. The bracteas, or floral leaves, are cordate, and pointed. The flowers, which expand only in bright sunny mornings, are small, compound, of a sulphur-yellow colour, and appear in terminal panicles, in August and September. The involucre or calyx is nearly cylindrical, and composed of numerous pointed, imbricated, unequal, flat scales, with membranous edges. The inflorescence is compound, imbricated, and uniform; the florets numerous, perfect, equal, monopetalous, ligulate, truncated, and four or five-toothed. There are five very short capillary filaments, having the anthers united into a cylindrical tube. The germen is nearly ovate, supporting a slender style, longer than the stamens, with two reflexed stigmas. The fruit is an obovate akenium or rather akenopsis surmounted with the stipitate pappus, which is fugacious. The seeds are solitary, erect and exalbuminous; with the radicle taper and inferior.—Fig. (*a*) represents a floret with the five united anthers, somewhat magnified; (*b*) a single akenopsis with the pappus.

The systematic name, *Lactuca*, from *lac*, milk, is obviously expressive of the milky juice with which the plants of this genus generally abound. *Virosa*, poisonous, the trivial name, alludes, no doubt, to its acrid deleterious properties.

Qualities and Chemical Properties.—The leaves and stem of this plant abound with a milky juice, which may be collected in great abundance, just as it is beginning to flower: in the same manner as that recommended by Mr. Jeston, of Henley-upon-Thames, for English opium.* Sir. J. Hill recommends it to be practised in the month of April, which is certainly too early: and Dr. Todd Thomson says that the plant must be gathered, and the *juice expressed*; a plan we consider to be objectionable, as the other fluids must necessarily be mixed with the white juice: which is of a strong fetid smell, of a bitter and acrid taste, and possesses the active powers of the plant.

Poisonous Effects.—Two drachms of the watery extract were applied, by M. Orfila, to the cellular texture of the back of a dog. At the end of two days, the animal, who had only been slightly drowsy, had some vertigoes, and died seventy hours after the operation. The ventricles of the brain contained no fluid; the exterior veins of that organ were distended and injected with black blood: the lungs presented a few patches of a brownish red colour, and their texture was somewhat more dense than natural

In a dog, which had been poisoned by three drachms of the extract, introduced in the stomach, *dissection* of the body threw no light on

* See *Transactions of the Society of Arts*, v. 41. p. 17.

the cause of his death: and in a rabbit which died a short time after we had administered half an ounce of the expressed juice, in a fluid state, we could discover no morbid appearances whatever.

Treatment.—The effects of this plant, when taken in an over dose, being decidedly *narcotic*, we again refer to our *Art.* Atropa, No. I. for the treatment that is required.

Medical Properties and Uses.—We consider this as one of the most valuable of our native plants: the inspissated juice is a mild sedative, and if administered in proper doses, constitutes an excellent substitute for opium; when its diuretic effects, which are somewhat powerful, are not contra-indicated. It generally proves somewhat laxative; promotes urine and gentle perspiration, and allays thirst. By the Germans its virtues are highly extolled, and they administer it in palpitation of the heart, and in intermittent fever. Dr. Collin relates twenty-four cases of dropsy; twenty-three of which were cured by taking it, in doses of eighteen grains, to three drachms, every twenty-four hours. In a dropsical case, that lately came under our care, it certainly produced a salutary action on the kidneys, and procured quiet sleep. We have also ascertained, to our own satisfaction, that it possesses another most important virtue, viz. *that of reducing the velocity of the pulse;* at the same time that it appears to increase its tone: and so remarkably efficient was its action on one patient, that three small doses of the tincture diminished the arterial impetus in the wrist from one hundred and twenty pulsations in the minute, to less than seventy; accompanied by intermissions. Unlike Digitalis, its effects on the brain are scarcely felt; and as the subject is one of considerable interest, and of no little consequence, we trust that our professional brethren will endeavour to elucidate our remarks, by further investigations.

Dose. Of the extract six grains, gradually increased.

Off. Prep. Succus spissatus Lactucæ virosæ.

Tinctura Lactucæ Virosæ.

℞ Lactucæ Virosæ Foliorum exsiccatorum, uncias quatuor;
Spiritûs tenuioris, octarios duos;
Macera per dies quatuor-decem, et cola.—Dosis, gtt. xx ad ʒj.

LACTUCA SATIVA.— *Garden Lettuce.*

SPEC. CHAR. *Leaves* rounded; stem-leaves heart-shaped; stem terminating in a corymbiform panicle.

Syn.—Lactuca sativa. *Lin. Sp, Pl.* 1118; *Willd. v.* 3. 1525; *Ger. Em.* 306; Gærtn. Fr. 2. 362.

FOREIGN.—*Laitue cultivee*, Fr.; *Lattuca*, It.; *Lattich*, Ger.

THE original country of the Garden Lettuce is unknown. By some it is supposed to be an accidental variety sprung from some other species of Lactuca. It was cultivated in England, by Turner, in 1562, and probably much earlier. The leaves are large, milky, frequently wrinkled, usually pale green, but varying much in form and colour in the different varieties. The radical leaves are roundish, and toothed at the margin; those of the stem are obovate or heart-shaped. The stem is round, leafy, two or three feet high, and corymbiform at the top, with numerous bright yellow flowers, which appear in July.

QUALITIES.—The Garden Lettuce contains, like the other species, a quantity of milky juice; having when inspissated, the dark colour, and, in some degree, the odour and taste of opium. The inspissated juice was found by Professor Pfaff to consist of 41 parts soluble in water, 7 of wax, 6 of resin, 18 caoutchouc, and 8 of loss=80.* It contains a free acid, analogous to the oxalic, but different, and a narcotic principle; but no morphia.†

MEDICAL PROPERTIES AND USES.—The Lettuce is universally esteemed as a cooling and agreeable sallad; and the expressed juice has been long known to possess considerable narcotic powers. Celsus says "Somno vero aptum est lactuca, maximaque æstiva, cujus cauliculus jam lacte repletus est." (Dr. Med. ii. xxxii.) The spirituous extract, under the title of *lactucarium*, has been strongly recommended by the late Dr. Duncan, in doses

* Pfaff, *System der Materia Medica nach chemischen principien*, Bd. vi. Leipsig, 1821.

† Caventou, *Journal de Chimie Medicale*, tom. 1, p. 300.

of from two to six grains, as a substitute for opium, in pulmonary consumption, and some other diseases.

Both the species of lettuce above described afford the lactucarium, which, however, as now prepared, is not the spirituous extract but the inspissated proper juice alone; and hence differs materially from the *thrydacé* of the continental physicians, which is formed by the expression of all the juices, both the crude and elaborated saps combined with all the other secretions of the plants which pressure can force out. The true lactucarium is obtained by wounding the plants in the flowering season when their vessels are filled to repletion with proper juice, and so irritable that they often spontaneously burst or are ruptured by very slight accidental injuries. If at this season transverse scratches, or slight incisions be made through the teguments of the stems, the milky juices exude, and soon become in a slight degree inspissated, when the exudations should be scraped off with a silver spatula, and evaporated to a proper consistence at the ordinary atmospheric temperature; or if artificial heat be applied, it should not exceed 120° of Fahrenheit's scale.

The soporific effects of lettuce have long been noticed and familiarly known: the poets feigned Venus, after the death of Adonis, to have sought a bed of lettuces to soothe her grief. And Galen, who, when old, suffered much from watchfulness, found great relief from eating a lettuce at night; a practice which is commonly resorted to, with the same effect, by wakeful persons in the present day.

In the type Cichoraceæ of the Compositæ, where the lactucæ are found, a narcotic principle more or less prevails along with the bitter one of the allied type Cynaraceæ, or Cynarocephalæ, and which gives way in the third group, the Corymbiaceæ, or Corymbiferæ, to an aromatic and stomachic principle, as in the chamomile and tansy. By cultivation, especially by exclusion from light, these narcotic and bitter principles are regulated and modified in their development, sometimes being increased, and sometimes lessened, according to the purposes for which the plants are intended to be used. By exclusion from light, the sap becomes only in part elaborated, and the taste and effects of

the plants ameliorated, as is the case in the cultivated lettuces, endives, &c. And hence it is, that the cultivated lactuca sativa has not only a much less nauseous flavour, but also affords much less lactucarium than the uncultivated lettuce, and especially than the lactuca virosa, as shown by the comparative experiments of Schutz, who from two plants of equal weights found 56 grains of dry lactucarium were afforded by the lactuca virosa, while from the lactuca sativa he only procured 17.

Besides the lactuca sativa, which is our common garden lettuce, the French cultivate as dietetic plants, the palmate, the oak, and the endive leaved species; (lactuca palmata, quercina, and intybacea;) all of which, however, as well as our lactuca sativa are believed by many botanists not to be distinct species, but only permanent varieties of the lactuca virosa, which is esteemed the parent or original form of all.

Lettuces, unlike many other vegetables, such as the cabbage, the spinach, &c., can be grown to as great perfection in a warm as in a temperate climate, provided they be grown on rich soil, and abundantly supplied with water. Hence, says Loudon, the lettuces of Paris, Rome, and Calcutta, are as large and tender as those of London and Amsterdam.

CONIUM MACULATUM.

Common, Greater, or Spotted Hemlock.

Class V. PENTANDRIA.—*Ord.* II. DIGYNIA.

Nat. Ord. UMBELLATÆ, *Lin.* UMBELLIFERÆ, *Juss. De. Cand. &c.* UMBELLINÆ, UMBELLACEÆ SMYRNIEÆ, *Burn.*

GEN. CHAR. *Calyx* marginal, nearly obsolete; *Petals* obcordate with inflexed points. *Fruit*, a nearly globular diakenopsis, 5-ribbed, and furrowed; the *ridges* crenulate, vallecules with many striæ, vittæ none. Involucre few-leaved; Involucels 3-leaved and dimidiate.

SPEC. CHAR. *Stem* much branched, smooth, and spotted. *Leaves* tripinnate; *leaflets* lanceolate, pinnatifid.

Syn.—Cicuta. *Rati. Syn*, 215. 1; *Ger. Em.* 1061, 1; *Camer. Epit.* 839. 1.
Cicuta vulgaris major. *Park. Theatr.* 933.
Conium. n. 766. *Hall. Hist.* v. 1. 337.
Conium major. *Bauh. Pin.* 160. *Morus. v.* 3. 290.
Coriandrum cicuta. *Crantz. Austr. fasc.* 3. 100.
Coriandrum maculatum. *Roth Germ.* v. 1. 130. v. 2. p. 1. 348.
Conium maculatum. *Lin. Sp. Pl.* 349; *Wild.* v. 1. 1395; *Fl. Brit.* 302; *Hook. Fl. Scot.* 88.
FOREIGN.—*Grand Cigue*, Fr.; *Cicuta Maggiore*, Ital.; *Conio* Ital.; *Schierling*, Ger.

COMMON SPOTTED HEMLOCK, or, as it is termed in our Dispensatories, *Conium*, is a tall umbelliferous biennial plant, indigenous to Britain; growing wild in almost every climate, and with us, is found by road-sides, in hedges and waste places; flowering in June and July.

The root is fusiform, resembling that of the common garden parsnip; of a yellowish-white colour externally, and white and fleshy within. The stem, which rises from two to five feet high, is herbaceous, erect, round, hollow, much branched, polished, and variegated with spots and streaks of a reddish purple. The

leaves much resemble parsley or chervil, a circumstance which has sometimes given rise to fatal accidents. The lower ones are large, spreading, and repeatedly compound; the upper ones are bipinnate; the whole stand on long furrowed footstalks; the leaflets are ovate, sharply serrate, of a deep shining green colour on the upper side, and a whitish green underneath. The umbels are terminal, compound, and many rayed. The general involucrum consists of several short, unequal, lanceolate leaves; the partial ones generally of three leaflets, which only half encompass the umbellule. The flowers are small, and very numerous; the petals white, the outer ones somewhat irregular, inflexed at the apex, and heart-shaped. The stamens are capillary, with roundish anthers. The germen is situated under the flower, supporting two reflexed styles, and obtuse stigmata. The fruit is an ovate, or roundish diakenium or rather diakenopsis, each carpel bearing five equal prominent primary ridges, the lateral ones marginal: the ridges are waved or crenated: and the vallecules are traversed by many streaks, but destitute of vittæ; the seeds are solitary, each having a deep narrow groove in front —Fig (*a*) represents the root with part of the stem; (*b*) a perfect flower magnified; (*c*) the pistil; (*d*) the fruit, also magnified.

Hemlock is not unfrequently mistaken by herb-gatherers, and even by medical men, ignorant of Botany, for other plants of the same tribe—most commonly for wild cicely, (Chærophyllum *sylvestre*,) which it very much resembles. By a little attention to the characters, the plants may readily be distinguished. Thus in *C. sylvestre* the stem is furrowed, without spots, and hairy; in hemlock it is smooth, and irregularly studded with purplish spots. The latter too has a broadish reflexed *involucrum*, consisting of from three to seven leaves, under both the universal and partial umbels; petals bifid; and seeds, that are striated and beautifully notched on the edges; whilst in the former the partial involucre only is present, the petals are entire, and the seeds are not striated The characters which discriminate Conium from the Lesser Hemlock, or Fool's Parsley, have been already fully pointed out under the article Ethusa.*

* The contrary,
bably have favou

Other umbelliferous plants are likewise frequently mistaken for hemlock even by those persons who are employed to collect herbs for medicinal purposes. A large quantity of œnanthe crocata was some time since, at least offered for sale, if not bought, as Conium; and in the summer of 1831, we met with a herb-gatherer who had collected a bundle of Myrrhis temulenta, mistaking it for Conium; and who, notwithstanding our assurances, insisted that it was the true hemlock, and contemned our warnings.

To errors such as these, and which can only be avoided by medical men being themselves conversant with the characters of the officinal plants, must much of the disappointment and many of the failures be attributed, that are so frequently heard of, as well as those fatal accidents which from time to time occur.

The name *Conium*, latinized from the κωνειον of Theophratus, is said to be derived from κωνος a *cone* or *top*, and figuratively applied to the hemlock, the giddiness and stupor produced by which, is thus likened to the whirling motion of the toy.

A plant, bearing this name, was celebrated amongst the ancients, as a violent poison; and those who were condemned to death by the tribunal of Areopagus, were poisoned by the juice of a species of hemlock. Theramanes, one of the thirty, and Phocion, suffered publicly from its effects: and Socrates, whose disciple he had been, and who was the only senator who ventured to appear in his defence, not only immortalized himself by his talents, wisdom, and virtues, but by his own death has conferred a notoriety on Conium, which time will never efface. The account of his death

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Kecksies, by which it is commonly known in many parts, and even so near town as in Essex. *Cicuta*, the old botanical name for the present Conium, if not the parent of the Welch *Cegid* and the Saxon Kecksy, has evidently a common root with them. Withering also calls the Æthusa, *Lesser Hemlock*. Shakspeare is very particular in distinguishing between the *hemlock* of the farmer and our Conium, which he mentions under the common name of Kecksies, saying, in one place, that *hemlock* grows with Charlock "in our sustaining corn;" and, in another—

"Her fallow leas
The darnel *hemlock*, and rank fumitory,
Doth feed upon, while that the coulter rusts
That should deracinate such savagery.
The even mead that erst brought sweetly forth,
The frickled cowslip, burnet, and green clover,
Wanting the scythe all uncorrected rank
Conceives by idleness, and nothing teems
But hateful docks, rough thistles, *kecksies*, burs
Losing both beauty and utility."

Henry V.

as narrated in the *Phædon* of Plato, we subjoin:* and while it affects the mind by its tender touches, and by a consideration of the blind and delusive impulses, which can stimulate a popular faction to a fatal deed, the consequences of which were unseen, till the glory of the Athenians was disappearing, it is evident that the symptoms which the poison is here said to have produced, do not exactly correspond to those we look for, from the Conium *maculatum* of Europe: but we must remember that the historian is not a physician from whom to expect a scientific or modern description; "that the idiosyncrasies of different individuals render them variously susceptible of the action of the hemlock;" and that all narcotic plants exert very different effects when administered to the natives of warm climates, to those which they produce when they are given either to the weak, or the robust, of our northern soil.

* "And Crito hearing this, gave the sign to the boy who stood near. And the boy departing, after some time returned, bringing with him the man who was to administer the poison, who brought it ready bruised in a cup. And Socrates beholding the man, said, 'Good friend, come hither; you are experienced in these affairs,—what is to be done?' 'Nothing,' replied the man, 'only when you have drank the poison, you are to walk about until a heaviness takes place in your legs; then lie down: this is all you have to do.' At the same time he presented him the cup. Socrates received it from him with great calmness, without fear or change of countenance, and regarding the man with his usual stern aspect, he asked, 'What say you of this potion? Is it lawful to sprinkle any portion of it on the earth as a libation, or not?' 'We only bruise,' said the man, 'as much as is barely sufficient for the purpose.' 'I understand you,' said Socrates, 'but it is certainly lawful and proper to pray the gods that my departure from hence may be prosperous and happy, which I indeed beseech them to grant.' So saying, he carried the cup to his mouth, and drank it with great promptness and facility.

Thus far most of us had been able to refrain from weeping. But when we saw that he was drinking, and actually had drunk the poison, we could no longer restrain our tears. And from me they broke forth with such violence, that I covered my face and deplored my wretchedness. I did not weep for his fate, so much as for the loss of a friend and benefactor, which I was about to sustain. But Crito, unable to restrain his tears, was compelled to rise. And Apollodorus, who had been incessantly weeping, now broke forth in loud lamentations, which infected all who were present except Socrates. But he observing us, exclaimed, 'What is it you do, my excellent friends? I have sent away the women that they might not betray such weakness. I have heard that it is our duty to die cheerfully, and with expressions of joy and praise. Be silent therefore, and let your fortitude be seen.' At this address we blushed, and suppressed our tears. But Socrates, after walking about, now told us that his legs were beginning to grow heavy, and immediately laid down, for so he had been ordered. At the same time the man who had given him the poison, examined his feet and legs, touching them at intervals. At length he pressed violently upon his foot, and asked if he felt it. To which Socrates replied, that he did not. The man then pressed his legs and so on, shewing us that he was becoming cold and stiff. And Socrates feeling it himself, assured us, that when the effects had ascended to his heart, he should then be gone. And now the middle of his body growing cold, he threw aside his clothes, and spoke for the last time. 'Crito, we owe the sacrifice of a cock to Æsculapius. Discharge this, and neglect it not.' 'It shall be done,' said Crito; 'have you any thing else to say?' He made no reply, but a moment after moved, and his eyes became fixed. And Crito seeing

[illegible] and mouth."

The description of the plant as given by Dioscorides only proves it to have been one of the *umbelliferæ*, his character of which may be applied to many species: and the references to it by latin writers, amongst whom are Persius,* Virgil, Lucretius, and Pliny, under the name of *Cicuta*, reflect no light on the subject.

Ælian states that when the Cean old men had become useless to the state, and tired of the infirmities of life, they invited each other to a banquet, and having crowned themselves as in celebration of a joyous festival, drank the poisonous juice, and terminated their existences together. Linnæus, Lamarck, and others, believed the Conium *maculatum* to be the plant used by the Grecians; others suppose that the fatal draught was compounded from different herbs; and Haller considers it to have been derived from the Cicuta *virosa*, a poisonous aquatic, which in its operation is much more powerful and violent than the common hemlock. To pursue the question is more interesting than useful; but it appears that the juice recently expressed, was the form of administering the poison; and that the draught taken by Phocion was large enough to cost twelve *drachmæ:* a fact, the knowledge of which defies our award to the particular species of hemlock, and gives fresh energy to our suppositions.

Qualities and Chemical Properties.—The leaves of hemlock, when fresh and bruised, have a strong taste, and an odour which has been compared to that of the urine of a cat: when dried they are not so disagreeable, but still possess a heavy narcotic smell. Their taste is slightly bitter and nauseous. Dr. Bigelow found, that if the green leaves are distilled, the water which collects in the receiver has an insupportable nauseous taste, while that remaining in the retort is comparatively insipid.

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* Rem populi tractas? *(Barbatum hæc crede Magistrum,*
Dicere, Sorbitio tollit, quem dira Cicutæ.)
Quo fretus? dic hoc, magne Pupille *Pericli.*
Sat. 4.
. . . Quo deinde, insane, ruis? Quo?
Quid Tibi vis? calido sub pectore, mascula Bilis
Intumuit, quam nec extinxerit Urna *Cicutæ.*
Sat. 5. c. v. 142.
Quippe videre licet pinguescere sæpe cicuta
Barbigeras pecudes, homini quæ est acre venenum.
Lib. 5. v. 897.

The acrimonious principle only is lost in drying: the narcotic remaining if the operation be carefully performed. Schrader, from a thousand grains of the plant, obtained, extractive 27.3; gummy extract 35.2; resin 1.5; albumen 3.1; green fæcula 8; he also detected various earthly and alkaline salts, which are found to vary according to the soil in which the plant grows. The volatile portion which has been obtained in water distilled from the leaves, did not exhibit any essential oil, and affected no change in the colour of litmus. It was not altered by sulphate of iron, nor acetate of lead. The virtues of Conium are extracted by alcohol, and sulphuric æther; to the latter it communicates a very deep green colour; and Dr. Thomson discovered that when the tincture is evaporated on the surface of water, a rich dark green resin remains, in which the narcotic principle of the plant appears to reside; in doses of half a grain it produces headache, and slight vertigo; Dr. Paris proposed to call this principle conein, but from its discoverer it has received the less appropriate name *Conia*, as the name for the principle thus differs not at all from the plural of the herb.

"Brandes has obtained an alkaline principle from the leaves, to which he has given the name of *Cicutin* or *Conin*. It is prepared by evaporating the alcoholic solution of the plant to dryness, then treating the residue with water, and adding to it magnesia, the whole being then again evaporated to dryness, and the residue treated with a mixture of alcohol and ether, the *Conin* is procured by the evaporation of the filtered solution. This principle possesses the following properties. 1. It furnishes a reddish precipitate with tincture of Iodine: 2 It precipitates yellow, the solutions of sulphate of mercury and hydrochlorate of zinc. Its action on the animal economy resembles that of strychnia; and the post mortem examination of animals killed by it displays the vessels of the head, the right auricle of the heart, the vena cava superior, and the jugulars gorged with blood: but no traces of irritation appear in the abdominal viscera." (Dr. A. T. Thomson.)

It is probably from the different processes employed and the different properties and qualities attributed to the Conein or Conia of Dr. Thomson, and the Conin or Cicutin of Brandes,

that hemlock, like the poppy, contains two or more active proximate principles, which have not as yet been well distinguished. Mr. Golding Bird, an intelligent chemist, has lately published in the Medical Gazette some valuable observations on the analysis of Conium, and on the processes usually recommended for the preparation of Conia; he says:—

A process was published in the last edition of Dr. Ure's Dictionary, for the preparation of a peculiar alkaloid from *Conium maculatum* copied from a continental journal, upon the repetition of which I was unsuccessful in obtaining it. This induced me carefully to repeat the experiment, and I find that no Conia can in this manner be procured; but by the following process it may prepared with great ease, and in a state of purity.

Digest the fresh leaves of Conium maculatum in alcohol, and set aside for some days, and strain the mixture; boil the alcoholic tincture for a few minutes, and when cold, filter. By this operation a solution is obtained of malate of Conia with extractive and some salts; decolourise with animal carbon, again filter, and add to the clear liquor a solution of carbonate of soda; a precipitate of carbonate of Conia will fall, which must be dried and dissolved in acetic acid: ammonia will now throw down Conia quite pure.

Conia, as thus obtained, is a powder perfectly white, slightly soluble in water, and very soluble in alcohol and ether. It turns red litmus-paper blue, and combines with acids, forming in some cases crystalline compounds, in others gummy masses. When heated with nitric acid a brownish yellow solution is formed, and by evaporation oxalic acid is obtained. When dilute nitric acid is used, a nitrate is obtained in fine needles.

When attempting to prepare Conia according to the German process, after obtaining the spirituous extract, and adding water and protoxide of lead, a lamp heat was applied; a dense, fœtid, suffocating vapour was given off, smelling intensely strong of hemlock, and producing a violent sensation of asphyxia; while on the surface of the fluid there appeared films of an oily matter. This operation was repeated in an alembic, and the vapors were condensed in a cool receiver. I thus obtained a

volatile oil very inflammable and smelling powerfully of hemlock.

By proximate analysis I find the leaves of Conium maculatum to consist of 1. Malate of conia; 2. A fœtid volatile oil; 3. Chlorophylle; 4. Resin; 5. Fœculin; 6. Albumen; 7. Lignin; 8. Acetates of potass and ammonia; 9. Malate of lime. The ashes contained traces of 1. Chloride of sodium; 2. Protoxide of iron; 3. Magnesia; 4. Lime.

Respecting the qualities of the root, the most discordant sentiments prevail; some persons avowing that it is highly deleterious, while others aver, that it may be eaten with impunity. It is well known that the root of Colchicum *autumnale*, a most active poison at one season of the year, is perfectly inert at others: these effects are of course regulated by the time of flowering, and depend on other processes in the growth of the plant which nature is producing—circumstances which probably apply with equal force to the roots of hemlock; for two pounds gathered on the last day of May killed a dog in six hours, although three pounds gathered in April had no effect whatever: hence its potency is probably the greatest when the plant is in full vegetation. Gmelin also mentions an instance where "four ounces of the juice were taken without injury," and another where "three ounces of the juice of the herb were swallowed daily for eight days with as little effect." These are still further proofs of the effects of season, if they are not rather evidences of impotent plants having been mistaken for Conium.

Störck,* without adverting to the season of the year in which he obtained it, states that the sliced root yielded a bitter and acrid juice, a drop or two of which applied to his tongue, rendered it painful, rigid, and so much swelled that he could not speak. This account we should have found it difficult to reconcile with our own experience, and that of many others, did we not allow much for the effects of season, which appear to have

* Radix recens dum in taleolas discinditur, fundit lac, quod gustu amarum et acre est. Hujus lactis unam alteramve guttulam linguæ apice delibavi. Mox lingua facta est rigida, intumuit, valde doluit, et ego nec verbum loqui potueram. (Störck. *De Cicuta*. F. 9.)

been estimated too lowly ;* for having gathered a considerable quantity of the root in March, we ascertained, contrary to our expectation, that its odour was not so strong as that of the few leaves which were springing from it ; and after chewing a drachm, we could discover no acrid power, and the taste, instead of being bitter, was sweet, and much resembled the flavour of a raw parsnip. Thus, as Dr. Thomson very properly observes, "Its narcotic principle varies greatly, according to the nature of the season, and the climate in which the plant grows. Thus it is a more virulent poison in Greece, Italy, and Spain, than in England ; and this is so very striking, as far as concerns locality, that we are informed by Mr. Steven, a Russian botanist, that the Russian peasants eat it with impunity, after it has been boiled in several waters." Still Mr. Alchorne asserts that he had tasted the root in every season of the year, and from most parts of our island, without finding any material difference, and that he has been informed both in Berlin and Vienna, that the roots are there no more violent than in England. A Mr. Lane † also ate a considerable part of the root without inconvenience ; and after that, he had some boiled, and found them as agreeable as carrots, which they resembled somewhat in taste. He has eaten them at all seasons, and from different places ; some were more pungent than others, yet not in a degree worthy of notice. According to Linnæus, sheep eat the leaves, while horses and cows refuse them. He also states that goats refuse them, which we believe to be incorrect. The thrush, according to Ray, eats the seeds, an extract from which is said to be more powerful than that from the leaves.

Poisonous Effects.—An over-dose of hemlock produces all the symptoms of narcotic poisons, such as sickness, vertigo, delirium, dilatation of the pupils, great anxiety, stupor, and convulsions. "It first produces giddiness and headache, which are followed by drowsiness so intense that the patients fall asleep whilst they are conversing ; coma and convulsions follow,

* Orfila, in his concluding remarks, and after many experiments, states, "that the fresh leaves of hemlock furnish, at a certain period, a juice which possesses energetic poisonous properties ; and that that which is obtained from the roots at the same time, possesses little activity."

† Curtis' *Flora Londinensis*.

and if proper means to obviate the fatal effects are not promptly taken, death rapidly ensues." We are indebted to M. Orfila for the following account:

On the 23rd of April, at one o'clock, a small dog was made to swallow an ounce and a half of the *fresh root* of Conium *maculatum;* the œsophagus was tied. Forty-eight hours after, he had experienced no bad effects. On the 25th, at noon, he was only somewhat dejected.

The same celebrated Toxicologist furthermore observes, that an ounce of the extract of the leaves killed a dog in forty-five minutes when swallowed; ninety grains killed another through a wound, in an hour and a half, and twenty eight grains another, when introduced into a vein, in two minutes. It therefore, as Christison remarks, acts by entering the blood vessels. The extract, however, is a very uncertain preparation, owing to the imperfect pharmaceutical processes usually depended on. M. Agasson speaks of a man who had taken hemlock, and who had all the upper parts of the body affected by convulsions, whilst the lower extremities were paralysed. A furious delirium has sometimes been observed in other persons: thus, according to Vicat, p. 274, an Italian who cultivated vines in his own country, found amongst them a plant of this kind, which he took for a parsnip; he ate part of *the root* for his supper, and gave the rest to his wife; after which they went to bed. In the middle of the night they awoke completely delirious, and began running here and there without a light over the whole house, in a fit of madness and fury; they struck themselves so rudely against the wall, that they were bruised all over, and their faces particularly, and eyebrows, appeared swelled and bloody: suitable medicines were administered to them, and they were restored to health.

M. Haaf, a French army surgeon, has recorded a fatal case of poisoning by hemlock, which closely resembled poisoning by opium.

In the year 1822, a grenadier in garrison at Torrequemada, in Spain, partook of some broth into which hemlock had been put, and died in three hours. On dissection, the stomach was half filled with crude broth; there were round the pylorus some red spots; the liver was very voluminous; there was no alteration in the intestines; the *vena cava* and the heart were emptied of blood; the pectoral cavity was narrow, and the left lobe of the lungs was sound, but the right one was entirely destroyed by a preceding suppuration. On opening the cranium, there flowed out a sufficient quantity of blood to fill two ordinary sized chamber utensils: the vessels of the brain were extremely gorged with blood.*

Dr. Watson has recorded in the Philosophical Transactions two cases which were fatal in the same short space of time: the subjects were two Dutch soldiers, who, in common with several of their comrades, took broth made with various herbs, and among the rest hemlock leaves. Giddiness, coma, and convulsions were the principal symptoms. The men who recovered were affected exactly as if they had taken opium. *Christison.*

The extraordinary fluidity of the blood noticed in Haaf's case was also observed by Dr. Christison in a body he examined at Edinburgh some years ago with Dr. Coindet of Geneva. He says,

* *Journal de Medicine*, v. 28, p. 107.

" a hypochondriacal old woman took, by advice of a neighbour, two ounces of a strong infusion of hemlock leaves, the same quantity of whiskey, which she swallowed in the morning fasting: she died in an hour, comatose and slightly convulsed, the vessels within the head were not particularly turgid, but the blood was every where remarkably fluid. Dr. Coindet subsequently found that a small portion of the infusion prevents fresh drawn blood from coagulating. On account of the extreme fluidity of the blood, it often flows from the nose, and the skin is much marked with lividity." *Gmelin's Pflanzengifte.*

TREATMENT.—See *Art.* BELLADONNA, No. I.

MEDICAL PROPERTIES AND USES.—The use of hemlock was principally confined to external applications, till it was introduced by Störck, as an internal remedy for scirrhus, cancer, and a host too numerous to mention of other chronic affections. The encomiums he bestowed upon it led to its universal adoption; but time and experience have proved, that however benignly it occasionally acts, when first administered, we are not warranted in attributing virtues to it of so conspicuous and valuable a nature. That in cancerous ulcerations the pain sometimes abates, and the discharges assume a less acrid character, will be readily admitted; but these effects are only temporary; and conium is now merely viewed as a valuable palliative. On painful sores, of a scrofulous kind; on unclers which remain in many irritable constitutions after the use of mercury; on some malignant sores, especially such as are met with on the tongue; on indurations of the breasts and of the testes; it frequently exerts a most salutary power; it also allays morbid irritability of the system, and is given with marked advantage in pertussis or hooping cough, and in those pulmonary diseases which frequently follow inflammation of the thoracic cavity. Chronic rheumatism also, and anomalous pains of the muscles, are often benefited by its use.

Rosenstein in Sweden; President Fisher and Prof. Jackson, in America, have found its relaxing effect to facilitate the passage of biliary calculi: and Bigelow confirms their accounts of its very beneficial efficacy in jaundice. Bergius extols it in

impotency,* and from its powerful action on the genitals it is freely prescribed, and much depended on in such cases by the German physicians. Fothergill, in our own country, and Chaussier and Dumeril in France, have found it successful in tic douloureux. Dr. Jackson, who has published several cases in the New England Journal, vol. ii. in which perfect relief was afforded to this disease, recommends "to begin with a single grain of the extract, and to increase to five grains for the second or third dose: afterwards to add five grains to every dose till a full effect is felt on the system." It has also been of great use in some cases of hemicrania, which are not regularly intermittent: and the bruised plant, or decoction of it, is sometimes applied as a fomentation to ulcerated surfaces, or as a cataplasm by adding linseed meal.

To avoid disappointment from its effects, which so frequently occurs, the plant must be gathered in June, just as it commences flowering. The leaflets should then be plucked from the foot-stalks, which are to be thrown away; and the former, after being carefully dried in the sun, or in a stove, very moderately heated, may be preserved in sealed paper, and firmly pressed into a box, from which both air and light are to be excluded if possible. The powder, the best manner of administering it, may be kept for years in an opaque closely-stopped phial. The extract can scarcely ever be relied on, from the carelessness observed in its manufacture: we therefore recommend our readers to practise Mr. Houlton's plan, which consists in submitting the expressed juice to the atmosphere, in shallow vessels; whereby spontaneous evaporation is produced; and a preparation obtained, containing all the virtues of the recent plant.

Dose.—In powder, gr. ij. gradually increased to ʒj.; or from gtt. xij. to lx. of the expressed juice.

Off. Prep. Extractum Conii, L. E. D.

Tinctura Conii, E. D.

* Impotentiam virilem sub usu Conii curatam observavi, in viro quodam plusquam quadragenario, qui omnem erectionem penis perdiderat, postinde tamen plures liberos procreavit." *Berg.*

Virgil on our next page will, however, shew that this plant was well known to him, whether it was cultivated in Italy in the Augustan age or not. The citron was introduced into Europe from Media under the name *malus medica*, and was first cultivated in Italy by Palladius in the second century. The orange is supposed to have been introduced into Italy not earlier than the fourteenth century, above a thousand years after the citron. In England these trees have been cultivated since 1629. Parkinson, writing at that time, says, "the orange hath abiden with some extraordinary looking and tending, when neither citron nor lemon trees could be preserved any length of time." The orange trees he alludes to were those of Beddington, in Surrey, introduced from Italy by a knight of the noble family of the Carews, and the first that were brought into England; they were planted in the open ground and placed under a moveable cover in the winter months. *Loudon.*

Sir Francis Carew is the knight above referred to, who introduced orange trees into England, in the reign of Elizabeth; but whether he imported plants, or raised them from seeds brought home by Sir Walter Raleigh, has not been satisfactorily ascertained. These were very fine trees, fourteen feet high, the girt of the stem twenty-nine inches, and the spreading of the branches one way nine feet, and twelve feet another. Evelyn informs us that they were neglected in his time during the minority of their then owner, and entirely killed by the great frost of 1739-40; they were planted before 1695. In this country the orange is chiefly prized as a green-house plant, and there are some splendid specimens in the conservatories at Nuneham-Courtenay in Oxfordshire, at Smorgony, in Glamorganshire, at the Wilderness in Kent, and at other places. "In the south of Devonshire, and particularly at Salcombe, one of the warmest spots in England, Loudon says, there may be seen in a few gardens orange trees that have withstood our winters in the open air for upwards of a hundred years; the fruit is as large and fine as any from Portugal. Trees raised from seed and inoculated on the spot, are found to bear the cold better than those which are imported. In our hot-houses the trees produce their pure white and very fragrant flowers in June; and after the first season of flowering, blossoms and fruit appear together on the same plant; the latter

remaining a year, or fifteen months, on the tree before it becomes ripe.

The Orange is a middle sized ever-green tree,* much branched, and covered with a greenish brown bark. In some trees the branches are furnished with short, solitary spines. The leaves are alternate, of a shining green colour, entire, nearly elliptical, pointed, and furnished with winged foot-stalks, by which they are distinguished from those of the lemon. The flowers are large, very fragant, and arise from the smaller branches, upon simple and divided peduncles. The calyx is saucer-shaped, and divided into five small pointed segments. The petals are five, oblong, white, concave, and beset with minute glands. The stamens are about twenty, united at their base into several sets, and support yellow anthers placed vertically. The germen is superior, roundish, and has a cylindrical style, with a globular stigma. The fruit is a spherical hesperidium, of a reddish-yellow colour externally, and internally divided into nine or eighteen cells, filled with a mucilaginous pulp, each cell containing from two to four cartilaginous seeds. The rind is composed of two distinct coats; the outer, thin and glandular; the inner, thick, whitish, and spongy.—Fig. (*a*) represents the pistil; (*b*) the stamens.

Of the Orange there are two principal varieties; 1. The sweet orange, including the China orange, the Portugal orange, and similar kinds; and 2. The bitter orange, including the Seville orange, which alone is directed in the Pharmacopœias; and other varieties, called *bigardes* by the French. The Malta, or blood orange, known by its red pulp, and believed by some, though on very insufficient grounds, to be a hybrid between the

* Virgil not only refers to the general character of the Orange tree, but proves that he was acquainted with the virtues of its juice (which it possesses in common with other vegetable acids) as an antidote to narcotic poisons.

"Media fert tristes succos tardumque saporem
Felicis mali: quo non præsentius ullum
(Pocula si quando sævæ infecere novercæ,
Miscueruntque herbas, et non innoxia verba)
Auxilium venit, ac membris agit atra venena.
Ipsa ingens arbos, faciemque, simillima lauro:
Et, si non alium latè jactaret odorem,
Laurus erat: folia haud ullis labentia ventis:
Flos apprimà tenax: animas et olentia Medi
Ora fovent illo, et senibus medicantur anhelis.

Georg. lib. 2. v. 126.

pomegranate and orange, is also another noted and much esteemed sort. The species of the genus *Citrus*, which contains not only the orange, but the shaddock, citron, and lime, are best distinguished, according to Miller, by the petiole, or leaf-stalk; in the orange and the shaddock, this is winged; in the lemon, citron, and lime, which are considered varieties belonging to one species, it is naked. The form and colour of the fruit also differs; thus in the orange and shaddock it is almost spherical, and of a yellowish red colour; in the lime it is spherical, but of a pale yellow; while the lemon is oblong, with a nipple-like protuberance at the end; the citron is also oblong, with a very thick rind.

Qualities.—The juice of the Seville orange is of a sour taste, combined with a sweetness and bitterness; and contains citric acid, though not in so great a proportion as that of the lemon. The outer rind, or cortical part, is of a grateful aromatic odour, and possesses a warm bitter taste; both of which depend on an essential oil, residing in distinct vesicles; from which it can be either expressed or distilled. Both the bitter and aromatic constituents are extracted by water and alcohol: and from the flowers may be distilled a grateful perfume, known under the name of "Orange flower water." The unripe fruit, or berries of the orange tree, commonly called *Curaçoa oranges*, are more bitter and aromatic, and, when dried, retain their flavour: infused in brandy, they furnish us with the Dutch liquor, termed Curaçoa.* An oil distilled from the flowers, is imported from Italy, under the name of *oleum* vel *essentia neroli*.

Medical Properties and Uses.—The juice of the Seville orange is sometimes recommended as a refrigerant: but it is neither so grateful, nor so plentiful, as that of the lemon. The rind, which should be thin, free from the white part, and from mouldiness, is a very grateful stomachic bitter; and is, therefore, frequently combined with other tonics; especially with cinchona, to which it is a most useful adjuvant. The confection of oranges, and cinchona powder, made into an electuary

* Dr. Kitchener's receipt for making this agreeable *liqueur*, is as follows: to a pint of *rectified spirits* add two drachms and a half of *sweet oil of orange-peel*; shake the mixture, and let it stand till the following day; then add one pint of *clarified syrup*, and filter.

with the syrup of orange-peel, is an excellent form of medicine for ague, as the taste is by no means disagreeable, and the stomach is seldom affected by the bark. The *infusum aurantii compositum* of the London pharmacopœia, is an elegant vehicle for small doses of neutral salts; for bitter tinctures; ammonia; magnesia; &c.: and combinations of this kind are frequently prescribed, with advantage, in gout and dyspepsia. The flowers and leaves, in doses of ʒß to ʒj, were formerly recommended as a remedy for epileptic and convulsive disorders; but experience has not confirmed the virtues attributed to them.

The China orange contains a large quantity of saccharine matter and mucilage, united to an agreeable acid; hence it is much employed as a wholesome, cooling, and antiseptic article of food for the sick, particularly in febrile, inflammatory, and scorbutic effections. Eaten, however, in too large a quantity, the orange is liable to produce great disorder of the stomach and bowels; cholic, diarrhæa, and cholera; and, like other sub-acid fruits, is hurtful in calculous complaints, diabetes, and generally in all those diseases arising from, or connected with, an imperfect assimilation in the primæ viæ.

This country is chiefly supplied with oranges from the Peninsula, where they are grown for exportation; they are likewise brought in great perfection from Italy, Malta, the West India Islands, and other places, but the best come from the Azores, Portugal, and Spain. The fruit is imported in slight chests and boxes, and each orange carefully wrapped in a separate paper. The orange trade carried on by this country is (as Mr. M'Culloch observes) of very considerable value and importance. Oranges are never much more, and often much less, expensive than most of our superior or even common domestic fruits, while they are perhaps the most refreshing and wholesome of those of warmer climates, and brought here in such abundance and perfection, as to give a tropical character to our markets and desserts. The duty on lemons and oranges produced in 1829, £53,184. It is assessed (continues the same excellent authority) at the rate of 2*s*. 6*d*. per package not exceeding 5,000 cubic inches; and assuming the contents of an orange or lemon to amount at an average to ten cubic inches, there will be 500

in every such package, and the total number imported will have amounted in the above-named year to 212,736,000; being at the rate of about thirteen oranges and lemons for each individual of the population of Great Britain. It is, however, believed that fully a third of the whole quantity imported is consumed in London and its environs; so that each individual of the metropolis may, at a medium, be supposed annually to consume 53 oranges and lemons, in the proportion perhaps of 50 of the former, and three of the latter; which must on the whole have a very beneficial effect on the health of so large and densely populated a town. It is not possible to form any estimate of the number of persons employed in the importation and sale of oranges, but they must certainly be very great. The policy of charging any duty on them seems questionable. They are very apt to spoil, and as no abatement is made from the duty on account of damage, its influence on their price is much more considerable than might at first be supposed. A circumstance to be regretted as it limits their consumption by the poor. The common orange is a most prolific plant; the crops often gathered are enormous. As an example, it may be stated that at St. Michael's a single tree has been known to afford twenty thousand oranges fit for packing; and these exclusive of the damaged fruit, which with the waste may be calculated to amount to ten thousand more.

"The dried unripe fruit *(Aurantium curassaventium)* is employed as an internal remedy in the same cases as the rind of the ripe orange. It is, however, more commonly used as a mechanical irritant in issues; for which purpose the smaller fruit is selected, and is generally made round and smooth in the turning lathe. It is preferred for this purpose on account of its odour only; for the heat and moisture of the part in which the orange lodged, swells it as much as the common pea; and therefore it requires to be removed once in twenty-four hours."

Dose. - Of the infusion from ℥j. to ℥ij, three or four times a day; of the tincture. ʒj to ʒß.

Off Prep.—Infusum Aurantii compositum, L.
Tinctura Aurantii, L. D. Confectio Aurantii, L. E. D.
Syrupus Aurantii, L. D. Aqua Citri Aurantii, E.

OLEA EUROPÆA.

European Olive.

Class II. DIANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. SEPIARIÆ, *Lin.* JASMINEÆ, *Juss.*

OLEINÆ, OLEACEÆ, *Link, Burn, &c.*

GEN. CHAR. *Corolla* 4-cleft; segments subovate. *Germ* 2-ovuled *Drupe* one-seeded, by abortion.

SPEC. CHAR. *Leaves* lanceolate, entire, hoary beneath. *Clusters* axillary, dense. *Branches* angular, not spiny.

Syn.—Olea sativa, *Raii. Hist.* 1541; *Park. Theatr.* 1439.

Olea europæa, *Lin. Sp. Pl.* 11; *Ait. Kew. v.* i, *p.* 12; *Fl. Græca Sibth.* t. 3.

FRENCH.—*L'Olivier*, Fr.; *Ulivo*, It.; *Oelbaum*, Ger.

THE Olive is an evergreen tree growing spontaneously upon a rocky soil, in Syria, Greece, and the north of Africa; and has been cultivated from time immemorial, and constitutes much of the riches of France, Spain and Italy. It is only in favourable seasons, when protected in the same way as the myrtle, by a slight temporary screen of straw, or other materials, that it produces its flowers in this country; but its fruit seldom ripens. It has been conjectured by some, that the Olive-tree came originally from Asia, as it is found in most parts of Palestine, and actually gave name to the celebrated mount near Jerusalem.

The Olive is a low tree, rising from twenty to thirty feet, and frequently sending forth two or three upright, much branched stems, from the same root, which are covered with a greyish bark. The wood is hard and compact; its colour reddish, and it takes a good polish. The leaves are opposite, two or three inches long

and about half an inch broad in the middle, nearly sessile, lanceolate, of a bright green colour, smooth on the upper surface, pale and hoary beneath. The flowers are produced in small clusters at the axillæ of the leaves, on short foot-stalks, and furnished with small, hoary, obtuse bracteas; the calyx is obtuse and four-cleft; the corolla is white, gamopetalous, spreading, and divided into four ovate, obtuse segments. Each flower contains two stamens, which are shorter than the corolla, supporting large pale elliptical anthers, and a single slender, erect, style, rising from a roundish germen, and crowned with a bipartite stigma. The fruit is a smooth oval plum or *drupe*, of a violet colour, when ripe, having a nauseous bitter taste, but abounding in a bland oil, and enclosing an ovate, oblong, rugose nut or stone.—Fig. (*a*) is a perfect flower, magnified; (*b*) the calyx, germen, and bipartite stigma; (*c*) the fruit; (*d*) the nut.

Species.—Of the genus Olea there are known about a dozen well marked species, the most important of which is the Olea Europæa, now under consideration. In China, the Olea fragrans is much esteemed; its leaves and blossoms are highly aromatic, and are employed by the Chinese at once to adulterate and flavour their teas. The name *Olea* is evidently derived from the Greek appellation, ελαια, and that, as De Theis conjectures, springs from the celtic *olew* oil. *Olea* is commonly applied to the tree, *oliva* to the fruit, and *oleum* to the oil expressed.

Varieties.—Of the European Olive, there are several varieties, distinguished chiefly by the shape of the leaves, or by the size, colour, and form of the fruit. Several of these appear to have been known to the ancients; thus Virgil enumerates three varieties, Cato mentions eight, and Columella ten. The long-leaved variety is chiefly cultivated in the south of France, and in Italy, on account of the fine oil which it affords; and the unripe fruit is also highly esteemed, when pickled. The broad-leaved is chiefly cultivated in Spain, where the trees grow to a much larger size than the Provence Olive, and yield a larger fruit; but the oil is said to be rank and disagreeable. Besides these, there are several other varieties of the Olive tree; as the iron-coloured, the twisted-leaved, the box-leaved, African, Lucca, &c.

Culture.—The cultivated Olive came originally from Asia; it grows abundantly about Aleppo and Lebanon. It became early naturalized in various parts of Italy, Spain and France. In Gibbon's "*Decline and Fall*," chap. i. he quotes Pliny for the following fact: "The Olive in the western world followed the progress of peace, of which it was considered as the symbol. Two centuries after the foundation of Rome, both Italy and Africa were strangers to that useful plant; it was naturalized in those countries, and at length carried into the heart of Spain and Gaul." "Its usefulness, the little culture it requires, and the otherwise barren situations which it renders productive, quickly spread it over the western face of the Appenines. The suckers are removed from the parent tree at all seasons; but the best is in spring and autumn, when the grounds are ploughed, and sometimes, if the trees are thinly scattered, sown with corn and lupines. Otherwise, the earth is merely loosened round the roots, and, in some cases, manure is laid round them.* The young olive plant bears at two years old; in six years it begins to repay the expense of cultivation, even if the ground is not otherwise cropped. After that period, in good years, the produce is the surest source of wealth to the farmer, and the tree rivals the oak in longevity; so that the common proverb here is, 'if you want to leave a lasting inheritance to your children's children, plant an olive.' There is an old olive tree near Gerecomio, which last year yielded 240 English quarts of oil: yet its trunk is quite hollow, and its empty shell seems to have barely enough hold in the ground to secure it against mountain storms."—Maria Graham's *Three Months near Rome*, p. 49.

According to Humboldt, the Olive is cultivated with success in every part of the old world, where the mean temperature of the year is between 58° and 66°, the temperature of the coldest month not being under 42°, nor that of the summer below 71°-73°. These conditions are found in Spain, Portugal, the South of France, Italy, and Turkey. The Olive also flourishes on the Northern Coast of Africa, but is not found south of the Great

* This does not agree with Virgil, who says, *Georg.* i. l. 507.
"No dressing they require, and dread no wound."

Desert. In Europe it extends as far north as latitude 44½°, in America scarcely to latitude 34°, so much greater is the severity of the winter on the other side of the Atlantic. In the neighbourhood of Quito, situated under the equator, at the height of eight thousand feet above the level of the sea, where the temperature varies less than even in the island climates of the temperate zones, the Olive attains the magnitude of the oak; but never produces any fruit." *Prolegomena.*

The proper time for gathering olives for the press, is on the eve of maturity. If delayed too long, the next crop is prevented, and the tree is productive only in the alternate years. At Aix, where the olive harvest takes place early in November, it is annual; in Languedoc, Spain, and Italy, where it is delayed till December or January, it is in alternate years. The quality of the oil also depends upon the gathering of the fruit in the first stage of its maturity. It should be carefully plucked by the hand; and the whole harvest completed, if possible, in a day.*

In Provence and Italy, the oil is drawn from the olives by presses or mills. The fruit is gathered when at its utmost maturity in November, when it begins to redden: being put under the mill, as soon as gathered, care is taken that the mill-stones are set at such a distance, that they do not crush the nut of the olive. The pulp covering the nut or stone, and containing the oil in its cells, being thus prepared, is put into bags made of rushes, and moderately pressed: and thus is obtained a considerable quantity of a greenish semi-transparent oil, which, from its superior excellence is called virgin oil. The *marc* remaining after the first pressure is broken to pieces, is moistened with water, and returned to the press, upon which there flows out a mixture of oil and water, which spontaneously separate by rest. This oil, though inferior to the former, is of good quality, and fit for the table. The marc, being again broken to pieces, well soaked in water, and fermented in large cisterns, is again submitted to the press, by which is obtained a third oil, that is valuable to the soap boiler, and other ma-

* See Hillhouse *on the Olive Tree.*

nufacturers. In Spain, the olives, instead of being gathered, are beaten down, so that the ripe and unripe ones are mixed; and to these are added such as have fallen of themselves, and are therefore more or less decayed. All these are thrown together in a heap, and soon ferment: the olives in this state are ground and pressed, and thus is produced, with little trouble, a large quantity of oil, of a rank, disagreeable flavour. It is probable that the Spaniards derive their process from the Moors; for we find the same method described in Jackson's History of Morocco.

Olive oil in Spain and Italy supersedes the use of butter and cream, and "the inhabitants of the south of Europe feel at least as much dislike to the produces of the dairy as we may feel to their general use of oil;" *(Barton;)* indeed, a line may be drawn which geographically separates the countries of butter and oil, which although admitting some exceptions, is on the whole sufficiently correct.

According to Malte-Brun this line extends from the Pyrenees through the Cevennes, the Alps and the Hæmus. And so marked is the difference of climate on either side of this boundary, as shewn by the change of vegetation, that, as Barton observes in his admirable essay on the geography of plants, "a traveller from the north crossing this chain of mountains for the first time is surprised and delighted at the new aspect of nature. Gigantic plants of the grass tribes (Arundo Donax) are seen rising to the height of twenty feet and upwards, the air is perfumed with the blossoms of the orange and lemon trees; which with the myrtle and pomegranate grow wild among the rocks. The American aloe here blooms in the open air, the Chamærops affords the first specimen of the magnificent tropical family of palms. It may perhaps be asserted without exaggeration that the appearance of vegetation exhibits a less striking change in travelling from Piedmont to Lapland, than in crossing the maritime alps from Piedmont to the gulf of Genoa. On the southern side of those mountains the vivid green of our meadows and forests is replaced by the dusky tint of the olive and the evergreen oak, which might perhaps be termed sombre, if not contrasted with the intensely dark indigo colour of a deep and tranquil sea, undisturbed by tides and resting on a rocky bottom. Nor is the olive itself by any means destitute of beauty. It has been compared to a willow: it differs however very materially in colour, having none of that sickly hue of blueish green which gives such a peculiar coldness to the landscapes of some of the Dutch painters. The upper side of the leaf has precisely

the tint familiarly known as *olive*: the under side is of a shining whiteness, and as the foliage is turned up by the lightest breeze, its progress over the valleys covered with olive gardens becomes visible in the form of a silver cloud gliding across the landscape."

The best olive oil is said to be made in the vicinity of Aix in France. That which is brought from Leghorn in chests, containing 30 bottles, or 4 English gallons, is also very superior; it is known in our markets by the name of Florence oil, and is used mostly for culinary purposes. *M'Culloch.*

The fruit in a pickled state, is sent in great quantities from Leghorn, Naples, Genoa, and Marseilles, to England; that from the two latter places are the most esteemed. *Pickled olives* are prepared from the unripe fruit, by repeatedly steeping them in water, to which quick lime or soda is added to shorten the process. Afterwards, they are soaked in pure water, and then taken out and bottled in a solution of common table salt with or without an aromatic. They are eaten abroad as a whet before and during the principle meals, and in this country chiefly at the dessert. The finest kind of the prepared fruit is called by the merchants *Picholine*, after one Picholini, who first discovered the art of pickling olives. The wood of the olive tree is beautifully veined, and has an agreeable smell; it is in great esteem with cabinet-makers, on account of the fine polish of which it is susceptible.

Qualities and Chemical Properties.—The best oil comes from Provence; but that which we have in this country is generally from Lucca and Florence. Samos has lately furnished us with some also. When recently drawn, virgin oil has a bland, almost mucilaginous taste, with a slight but agreeable flavour. It is unctuous to the touch; will not combine with water; is inflammable; and insoluble in alcohol. Its specific gravity is 9153: it boils at about 500°, Fahr., and congeals at 36° or 38°. When exposed to the air, in an open vessel, a white fibrous albuminous substance is deposited, and the supernatant oil becomes clear, and of a dilute yellow colour: and when this oil is poured off into another vessel, a second deposition occurs, and the oil thus obtained, being put into clear glass bottles, may be kept for a convenient time, without undergoing any change. But if the oil be allowed to stand on the white matter, it becomes in a few weeks very rancid: nor can the common oil, even under proper management, be preserved in casks longer than a year or two. The disposition to freeze, renders it improper for lamps, especially in cold countries: but by previously exposing it in an open clear glass to the sun, it may be so far amended in this respect, as to continue fluid at 21°. According to the recent observations of the late Dr. Clarke, of Cambridge, this oil crystallizes in rectangular four-sided prisms with square bases.

Chevreul, in his *Recherches sur les Corps gras*, has shewn that fixed oils consist of two proximate principles, upon the relative

proportions of which in a great measure depend their relative degrees of fluidity, solidity, &c., and therefore that, as afforded by nature, they are doubly compound bodies. By exposure to a low temperature the seprinciples separate, the one solidifying much sooner than the other, which remains fluid at very low temperatures indeed. The first, Chevreul has named, Stearine (from στεαρ, suet) in which it is the chief ingredient. It likewise abounds in the butter nut oil, and in the palm oil, which are solid at all ordinary temperatures. The second he has called Elaine (from ἔλαον oil.) This principle may be obtained in a state of considerable purity by pressing the stearine of frozen oil between layers of bibulous paper, and then squeezing the paper under water, when the Elaine collects upon the surface. In this state of purity it is peculiarly fitted for greasing the wheels of watches, and other delicate machinery, since it does not thicken or become rancid, by exposure to the air, and requires a cold of about 20° F. for congelation. According to the analysis of Gay Lussac and Thenard, 100 parts of olive oil consist of carbon 77.213, oxygen 9.427, and hydrogen 13.26. From these proportions it is inferred, that Olive oil contains 10 equivalents of carbon, 1 of oxygen, and 11 of hydrogen. *Turner.*

The olive is remarkable for containing a fixed oil in the pulp of its fruit. Fixed oils are almost invariably confined to the seeds of plants, as in the poppy, almond, linseed, rape seed, &c. &c. the drupes of the olive and the melia being perhaps the only exceptions.

Adulterations.—Olive oil is frequently mixed with the oil of poppy seeds, and as the latter freezes less freely, *rancidity* is more easily produced. To discover the fraud, it is necessary to expose a sample to the freezing temperature, when the oil of olives will congeal, and that of the poppies remain fluid. Or if the *pernitrate of mercury* (made by dissolving six parts of the metal in 7.5 of nitric acid, of sp. grave. 1. 36, at a common temperature) be mixed with olive oil, the mixture, if kept cold, will in the course of a few hours become solid, whereas, if it has any admixture of the poppy oil, it will not undergo such a change. If olive oil be contaminated with lead, which is sometimes employed to remove its rancidity, it may be detected by shaking one part of the suspected sample with three parts of water, impregnated with sulphuretted hydrogen, in a well stopped phial.

Medical Properties and Uses.—The medical properties of olive oil are those of a demulcent, emollient, and laxative. In catarrh and other pulmonary affections, it has been used as a demulcent, in the form of emulsion: but the oil of almonds is more generally employed. It is occasionally recommended to be internally administered for worms; and to lubricate, and sheath, the mucous membrane of the stomach, from the action of acrid poisons, par-

ticularly of cantharides. From the experiments, however, of Dr. Pallas, repeated by Orfila, it appears that oil possesses the property of dissolving the active principle of *cantharides*, and augments the danger instead of preventing it.* And Dr. Whiting has shewn satisfactorily, in a communication made to the Medico-Botanical Society of London, that its admixture in small quantities with morphia, renders the peculiar affects of that medicine more regular and certain. It has likewise been found the most useful medicine, in doses of 1—2 oz. in those peculiar cases in which excretions of fatty matter take place from the bowels, bladder, &c., and which are likened to the formation of ambergris in the cetacea.

Olive oil enters into the composition of plasters, liniments, cerates, ointments, and enemas; and warmed, has been lately injected with success, in a case of constipated bowels, which had resisted the action of other medicines. It is applied externally to prevent the contagious influence of the plague. Mr. Jackson, in his History of Morocco, narrates many individual cases of its success, even after infectious symptoms had manifested themselves: and as his veracity cannot be impeached, his advice, in the absence of better treatment, is entitled to attention although the French physicians do not appear to rely much upon its virtue. The application should be, by long continued friction; and when successful, it is followed by profuse and general perspirations, that are said to afford immediate relief. In Malta the frictions with oil were found beneficial only in the first and last stages of the disease; but were of no advantage when it was at its height. The internal and external use of olive oil was formerly celebrated for the bite of the viper,† rattlesnake, and other venomous serpents; though little reliance is now placed in it. The use of it, as a condiment, and in the arts, is too well known to require any comment.

Dose.—From ʒj to ℥j or more.

Olive oil is the chief article of export from the kingdom of Naples, and from its being in great part exported from Gallipoli, it has acquired that denomination; it is principally produced in the provinces of Puglia and Calabria Ultra; the Puglian oil is the best, and is preferred by the woollen manufacturers. By far the largest portion of the olive oil brought to England is imported from Italy, principally from Gallipoli; but Spain supplies us with a considerable quantity; and a few thousand gallons are obtained from the Ionian Islands. The duty levied on Olive oil is £8. 8*s.* per ton, of 252 gallons, amounting to about £20. per cent. or one fifth of the price. In the year 1830, 8,524 tuns, or 2,148,048 gallons of olive oil were imported, yielding to the government a revenue of £71,878. 11*s.* 9*d.* *M. Culloch.*

* *Journal de Pharmace*, Nov. 1822.

† *Medical Zoology*, art. *Vipe*

ANAGALLIS ARVENSIS.

Scarlet

Class V. PENTANDRIA.—*Ord.* I. MONOGYNIA.

Nat. Ord. ROTACEÆ, *Linn.* LYSIMACHIÆ, *Juss.* PRIMULACEÆ, *De Cand.* PRIMULINÆ, PRIMULACEÆ, *Burn.*

GEN. CHAR. *Calyx* 5-parted. *Corolla*, wheel-shaped. *Stamens*, hairy *Fruit* a 1-celled pyxidium.

SPEC. CHAR. *Leaves* ovate, sessile, dotted beneath. *Stems* procumbent. "*Corolla* minutely notched."

Syn.—Anagallis arvensis, *Lin. Sp. Pl.* 211; *Willd. v.* 1. 822, *β*; *Fl. Brit.* 230.
Anagallis flore phœniceo, *Raii. Syn.* 282, 1; *Park. Theatr.* 558; *Vaill. Paris*, 12.
Anagallis mas, *Ger. Em.* 617. *f*; *Fuch.* 20. *c.* 2; *Math. Valgr. v.* 1. 559. *f*; *Camer. Epit.* 394. *f.*
Anagallis, *n.* 625. *Hall. Hist. v.* 1. 276
FOREIGN.—Αναγαλλις, *Dioscor.*; *Mouron*, Fr.; *Anagallide*, Ital.; *Gaucheil*, Ger.

THIS is a low, annual plant, with elegant scarlet flowers, and a procumbent stem; resembling common chickweed. It is indigenous to Britain; growing plentifully in cultivated grounds, particularly in rich garden soils; and flowering nearly the whole summer.

Pimpernel has a small fibrous root. The stem is square, much branched, smooth, slender, and clothed with small ovate, shining green leaves, which are either placed opposite, in pairs, without foot-stalks, or four together, and marked with purple spots underneath. The flower-stalks are angular, opposite, one flowered, bending downwards after flowering. The calyx is five-parted, acute, keeled, and permanent. The corolla is bright scarlet, violet coloured at the mouth, syn-or gamo-petalous, wheel-shaped, and divided into five ovate segments, the margins of

which are slightly notched, or beset with minute glands. The stamens are five, purple, hairy, and supporting yellow heart-shaped anthers. The germen is globular; the style purple, filiform, with a capitate stigma. The pyxidium is spherical, about the size of a pea, opening horizontally, and containing several small, brown, angular, roughish seeds.—Fig. (*a*) exhibits a single stamen; (*b*) the calyx, germen, and pistil; (*c*) the fruit.

The name *Anagallis*, retained from the old Greek and Roman authors, is by some supposed to be deduced from the verb αναγελαω, to smile, because the plant is conspicuous for the beauty of its flowers; others believe it to refer to the former reputed properties of the plant, which is extolled both by Dioscorides and Pliny, for removing obstructions of the liver, which they considered the causes of low-spirits and despondency. The flowers expand only about the middle of the day, and close at the approach of rain; and from this circumstance it is denominated the *shepherd's, or poor man's weather glass.*

It likewise forms one of the Floræ horologicæ, opening its flowers regularly about eight minutes past seven in our latitude, and closing them about three minutes past two in the afternoon. (*Loudon.*)

Properties and Uses.—Pimpernel formerly held a place in our pharmacopœias, and was considered to be detergent, vulnerary, and cephalic; and by the ancients it has been extolled for its virtues in gout, gravel, convulsions, and the plague. Gelin and others have asserted its success in hydrophobia; and had subsequent experience confirmed its powers in this disease, we should view it not merely as a prettty flower, but as one of the most useful in the vegetable kingdom. It is not now employed, but the following account from Orfila will prove its poisonous effects.

"At eight in the morning, three drachms of the extract of Pimpernel, dissolved in an ounce and a half of water, were introduced into the stomach of a robust dog. At half-past twelve he had a motion. At six in the evening he was dejected. At eleven sensibility appeared diminished. The next morning at six, he was lying upon the side, and appeared to be dead: he might be displaced like an inert mass of matter. He expired half an hour after. The mucous membrane of the stomach was slightly inflamed: the interior of the rectum was of a bright colour; the ventricles of the heart were distended with black coagulated blood; the lungs presented several livid spots, and their texture was preternaturally dense. Two drachms of the same extract, applied to the cellular texture of a dog's thigh, produced death in twelve hours: and the heart and lungs presented the same appearances as in the other.

Birds, of the passerine kind, are said to feed on the seeds with avidity.

SOLANUM DULCAMARA.

Woody Nightshade, or Bitter-sweet.

Class V. PENTANDRIA.—*Ord.* I. MONOGYNIA.

Nat. Ord. LURIDÆ, *Lin.* SOLANEÆ, *Juss. De Cand. &c.* SOLANACEÆ, SOLANEÆ, *Burn.*

GEN CHAR. *Corolla* wheel-shaped. *Anthers* opening with two pores at the apex. *Berry* 2 or more celled.

SPEC. CHAR. *Stem* shrubby, zigzag, without thorns. *Upper leaves* irregularly hastate, the lower ones cordate. Racemes compound. *Corymbiform* drooping.

Syn.—Solanum lignosum, seu Dulcamara. *Raii. Syn.* 265, 1; *Park.* 350.
Amara dulcis. *Ger. Em.* 350. *f.*
Solanum. n. 575. *Hall. Hist.* v. 1. 248.
Dulcamara flexuosa. *Moench. Meth.* 514
Vitis sylvestris. *Matth. Valgr.* v. 2. 619.; *Camer. Epit.* 986. *f.*
Solanum Dulcamara. *Lin. Sp. Pl.* 264; *Willd.* v. 1. 1028; *Fl. Brit.* 256; *Curt. Lond. fasc.* 1. t. 14; *Woodv.* t. 33; *Hook. Scot.* 79; *Bull. Fr.* t. 23.
FOREIGN.—*Douce-amere*, Fr.; *Dulcamara*, Ital.; *Amara-dulcis*, Sp.; *Docamarga*, Port.; *Bittersuss*, Ger.; *Bittersöde*, Dan.; *Solotucha*, Russ.

WOODY NIGHTSHADE, called also Bitter-sweet, from the flavour of the herb when chewed, and in Cumberland, *Felloncrowd*, is an indigenous climbing shrub, very common in moist hedges, on the banks of ditches, and sometimes on old walls; flowering from June to September. It grows also in similar situations in most parts of Europe, occurring in Greece, and even as far north as Norway.

This well-known species of Solanum has several long, slender, roundish, winding stems, divided into a few erect, alternate branches, and rising, when supported, to the height of eight or

ten feet. The stalks are covered with a greyish-green bark, on the lower part, but of a purple hue on the upper side, towards the ends of the branches. The root is small, creeping, and woody. The leaves are alternate, acute, mostly smooth, though sometimes hairy, soft, of a dull green colour, and supported on footstalks. They are cordate towards the bottom; more or less perfectly halbert-shaped at the top. The flowers are in very elegant, branched corymbiform racemes opposite to the leaves, or terminal; drooping, divaricate, and alternately subdivided. The calyx is small, 5-10-cleft, with blunt segments: corolla wheel-shaped, consisting of five, reflected, equally divided, acute, violet coloured segments, with two round pale green, or whitish spots at the base, and large yellow anthers, longer than the filaments, subcoalescent into a sort of cone. The germen is roundish, having a thread-shaped style projecting beyond the anthers which dehisce by pores. The berries, which ripen in autumn, are oval, scarlet, full of a nauseous juice, and contain several whitish, plano-convex seeds. The embryo is spiral. A hairy variety is mentioned by Ray as growing on the southern coasts of England; and another with white flowers is noticed by Merret: the leaves are sometimes found variegated.—Fig (*a*) represents the stamens; (*b*) the pistil, germen, and calyx.

The origin of the word *Solanum* is extremely doubtful; some ingenious etymologists derive it from *Solamen*, (*a solari*,) comfort or consolation, in allusion to the relief afforded by some species as medicines, while other commentators believe the name to be a corruption of "*Sulanum* a suibus qu. suillum, quod suibus adversus venenosos morbos exhiberi solet;" and others again, a *sole*, referring to the splendour of the fruit

Qualities and Chemical Properties.—The dried herb is inodorous; but the smell of the recent plant is heavy and disagreeable. The stalks, whether fresh or dried, have a slightly bitter taste, followed by a remarkable sweetness, somewhat resembling liquorice, a peculiarity which, no doubt, suggested the names *Glycipicros* and *Dulcamara*, of which the English trivial name is a just translation. The twigs, which for medicinal use should be gathered in the autumn, are the only parts employed,

though the roots are said to possess similar qualities. Water appears to be a perfect solvent of their active properties; but much boiling destroys their powers. The chief soluble portion seems to be a kind of mucous extractive, which is taken up both by water and alcohol, though most by the former: and the nitrate of mercury and muriate of tin, give precipitates from both, though most from the water. An ounce of the twigs, according to Hartmann and Kuhn, when treated with alcohol, afforded two drachms and two scruples of extract. The same quantity treated with water, gave three drams and thirty-five grains.

Solanum *Dulcamara* has been subjected to similar modes of analysis with many other plants, by which alkaloids or other active proximate principles have been extracted from them: and like veratrum, opium, and belladonna, it also affords an alkaloid, which has been named by its discoverer, Desfosses, *Solania*. Solania exists naturally in combination with malic acid, and if the juice of the ripe berries be expressed and filtered, it will be precipitated of a grey colour, on the addition of ammonia. To purify the solania thus obtained in a crude state, it should be well washed, dried, and dissolved in hot alcohol, and the solution, if evaporated slowly, will throw down the solania in the form of a white powder, having a pearly lustre. It requires 8000 times its weight of alcohol for its solution, is but sparingly soluble in ether, and is wholly insoluble both in water and in oil. Its reaction with acids is decidedly alkaline, for with them it forms neutral salts, having a bitter taste. A similar body has been found in the other species of Solanum as well as the *Dulcamara*, but in different proportions; to it they probably owe their poisonous properties, as when given to animals it induces somnolency, but does not appear to be a very active principle. *Journ. de Pharm.* vi. & vii.

Poisonous Effects.—Belonging to the same natural order with hyoscyamus, the different species of Solanum are considered by Orfila and others, to be possessed of similar properties; although in a much less potent form. Indeed we are inclined to think the identity of name with the *deadly nightshade*, (Atropa belladonna,) which was formerly called likewise, Solanum, it being

the Solanum furiosum, lethale, somniferum, and melanoceros of the older writers, has contributed not a little to exaggerate the poisonous character of the *Dulcamara* and other species of the modern genus Solanum. Schlegel, (Hufeland's journal 54, ii. 29.) says, that those persons are in error who have believed Solanum *Dulcamara* to possess distinct narcotic properties. And M. Duval states, in his treatise on the Solaneæ, that he found a dog might take 180 berries, or four ounces of the extract, without inconvenience; and furthermore, he quotes an experiment on the human subject, where thirty-two drachms of extract were taken in two doses, also without injury. Upon which evidence Christison concludes, that "if it has any power at all, it must possess too little to be entitled to the name of a poison." A conclusion which seems justified by the previous evidence, and one in which we should have concurred, had not counter experience, such as we shall immediately adduce, led us to question its propriety, and to doubt whether some undetected error may not attach to the observations of M. Duval. We therefore must warn our readers, that, given in an over dose, a decoction of the twigs of Solanum *Dulcamara* produces on the human subject the ordinary symptoms of narcotic poisons. The crimson berries, which with those of the white and black Briony, (Bryonia, *dioica*, and Tamus *communis*,) ornament our hedges at the approach of winter, are known to the peasantry by the name of "poison berries." They have a disagreeable, bitter, nauseous taste; and the subjoined extract of a letter from Mr. Wheeler, Surgeon, of Bayswater, attests in a striking manner their deleterious effects.

"On the 23rd of September, 1824, I was sent for, in great haste, to see two children belonging to Mr. Hebbut, of Kensington Gravel Pits. The elder was five years old, the younger three and a half. While playing in a field, close by their home, they were attracted by the sight of the beautiful red berries of the *Dulcamara*, and each ate a few. On their return home, about an hour after partaking of them, they were seized with the most excruciating pains in the whole course of the intestines; attended with great heat in the throat and chest. They could not bear the slightest pressure on the abdomen; and suffered much from nausea, thirst, and prostration of strength. It immediately occurred to my mind that these were the effects of some vegetable poison, and on questioning the mother, she ascertained where they had been, and that they had partaken of some berries. The pulsations at the wrist had now become exceedingly frequent, and the breathing painful and hurried.

Hot water being at hand, I had them put into a bath, and administered a strong solution of sulphate of zinc every five minutes, which soon dislodged the contents of the stomach; and I had the satisfaction to see several berries rejected, which were partially masticated, and appeared as though they were undergoing the process of digestion. After coming out of the bath, leeches were applied to the abdomen, and the bleeding was encouraged by poultices. I also ordered twelve grains of calomel for the elder, and ten for the younger, which were followed by a mixture of castor oil, manna, and laudanum, in proper proportions. Injections of beef broth were also frequently administered. In the evening, I found that the bowels had been freely acted on, and the evacuations were green, slimy, and extremely offensive. The tongue of each was red and dry.

"(Sept. 24th.) The tongues continued in the same condition. The bowels had been freely opened in the night. The breathing was but little improved. The bowels were not so much distended, nor was the pain produced by pressure, so great. The pulses were still hard and quick; I therefore ordered the calomel, castor oil, and leeches to be repeated.

"(25th.) Pulses soft and reduced in velocity. A gentle moisture pervaded their skins; the breathing was better, and their bowels much relieved; the evacuations had been plentiful, and were not so green. Calomel and castor oil to be persisted in.

"(26th.) Are much better and free from pain, but extremely debilitated. Ordered them beef tea and mucilaginous drink. After this they gradually recovered, and on the 30th I took leave of them."

"In 1825, a child of Mr. Simmons, four years old, residing in Camden's Place, swallowed some of the berries. He was a fine, stout, healthy boy. The symptoms were exactly the same as those already described, but attended with violent vomiting and purging, with contraction of the abdominal muscles. *There was also a profuse secretion of saliva.* I took five ounces of blood from the arm; gave twelve grains of calomel in a little sugar, and ordered the oily mixture with four drops of laudanum in each dose. Leeches were also applied to the abdomen. In the evening, I found that the bowels had been freely acted on, and the breathing was much improved. I continued my attendance for several days, and considered that his recovery was probably protracted from my not having seen him till three hours after he had taken the berries.

"I have had the pain to be called to the Harrow Road, on two occasions, where the little sufferers died, from my visits being protracted to ten and twelve hours after the poisonous repast. In neither case could I obtain leave to inspect the bodies."

On animals, the berries of Solanum *Dulcamara* produce but little or no effect, as we have ascertained by experiments; the results of which support the accuracy of those which are detailed in the work already referred to by M. Duval, entitled *Histoire Naturelle, Médicale, et Economique des Solanum.*

MEDICAL PROPERTIES AND USES.—The effects of the Solanum *Dulcamara* are those of a narcotic, diaphoretic and diuretic: in large doses it produces nausea, vertigo, syncope, diarrhœa, and

even death. Chronic rheumatism, gout, incipient phthisis, humoral asthma, jaundice, and several other diseases, are said to have been benefited by the use of this plant; and although it is now but little employed, it has been highly recommended by Linnæus, Carrere, and others, for its efficacy in herpetic diseases, scabies, and the eruptive or secondary symptoms of syphilis. Murray, in his "Apparatus Medicaminum," says it promotes all the secretions; and Bergius recommends its use in rheumatism, uterine obstructions, and suppression of the lochia. According to a letter from Sir Alexander Crichton, which is published in Dr. Willan's celebrated work on Diseases of the Skin, only two cases of Lepra Græcorum, out of twenty-three, resisted its action. Psoriasis and pityriasis, appeared also to be benefited by it. His mode of employing it is the following: Take of the stalk of *Dulcamara*, one ounce; water a pound and a half; boil to a pound, and strain when cold. Of this decoction, the patient is recommended to take two ounces, morning, noon, and evening, and to increase the doses till a pint is consumed a day. Where the skin is not in an inflamed or very irritable state, a strong decoction may be applied, as a useful auxiliary. Dr. Crichton found that in delicate people, and hysterical women, it frequently produced syncope and slight palpitation of the heart, attended occasionally by nausea and giddiness. Our own experience confirms these remarks; but if the dose be somewhat diminished, and an aromatic added, these symptoms cease. Professors Bigelow and Murray and Dr. Bateman confirm the utility of this medicine; and the latter considers, that "one of the most effectual remedies for lepra, under all its varieties, is the decoction of the leaves and twigs of the Solanum *Dulcamara*." We have often given it to patients afflicted with the different varieties of lepra, and sometimes with success; but as lepra is a disease, which, in this country, may be generally traced to a want of tone or vigour in the whole system, we prefer a general mode of treatment to a specific one; and believe, that experience will confirm the propriety of this view of the subject. By some it is averred to be a valuable auxiliary to mercury, and as it is a medicine indigenous to our own country, we should strongly recommend it to be employed on an extensive scale, in

our hospitals, that its real powers may be ascertained. Dr. Cullen found different parcels of the herb to exhibit very different degrees of strength; but as we think with Professor Bigelow, that "the appearance of slight narcotic symptoms is an evidence of the goodness of the medicine," we can regulate the dose by its effects. As it is an active medicine, it is proper to begin with small doses. Dr. R. Pearson, in his practical Synopsis of the Materia Medica, observes that an infusion or decoction of the stalks or twigs is a powerful diuretic, and has been given with good effect in humoral asthma and dropsy. He recommends two drachms of the fresh stalks, chopped small, to be infused in eight ounces of boiling water. Of this infusion, which is a more certain preparation than the decoction, since by long boiling the active properties of the plant are mostly dissipated, two ounces may be given three or four times a day. Of the powder, which is rarely employed, the dose may be from one scruple to a drachm or more, gradually increased.

Off. Prep.—Decoctum Dulcamaræ. *L.*

SOLANUM NIGRUM.

Common, or Garden Nightshade.

Spec. Char. *Stem* herbaceous, without thorns. *Leaves* ovate, bluntly toothed, or wavy. *Umbels* simple, lateral, drooping.

Syn.—Solanum vulgare. *Raii. Syn.* 265.
S. hortense. *Ger. Em.* 339. *f.*; *Matth. Valgr.* v. 2. 415. *f.*
S. nigrum. *Lin. Sp. Pl.* 266; *Willd.* v. 1. 1035; *Eng. Bot.* v. 8. t. 566; *Woodr. Suppl.* p. 37. t. 226.
Foreign.—*Morelle de Jardins*, Fr.; *Solatro nero*; *Morella*, It.; *Hierbal moro*, Sp.; *Garten-Nachtschatten*, Ger.; *Svineurt*, Dan.; *Hansletegräs*,

Garden Nightshade is an annual plant, occasionally however becoming perennial, common on waste, as well as cultivated grounds, in all parts of Europe, flowering from June to September. The root is fibrous. The stem rises about a foot and a half in

height, with numerous angular, or winged, leafy branches, rough, and of a purple colour. The leaves are alternate, slightly downy, sinuated, or indented, and placed on short footstalks. The flowers are in small simple umbels or sertula, the petals are white, with yellow anthers, and stand on simple downy pedicles. The berries are about the size of currants, globular, usually black, but occasionally yellow, according to Hudson.

Our figure shows a small sprig, both in flower and fruit; the several parts of fructification are likewise separately shown; (*c*) the calyx, with germen, style, and stigma; (*d*) the corolla, with the subcoalescent anthers; (*e*) an anther separate, showing its dehiscence by pores, and giving exit to the pollen; (*f*) a section of the fruit, showing the seeds: (*g*) a seed the natural size; (*h*) a seed magnified.

Qualities and Chemical Properties.—Garden Nightshade has a fœtid odour, but the taste is merely herbaceous, without any peculiar flavour. The same new alkaline principle was discovered in the fruit of this as in the preceding species by M. Desfosses, in combination with malic acid, and which he has denominated *Solanine*.* It is obtained simply by adding ammonia to the filtered juice of the ripe berries, digesting the precipitate in alcohol, and evaporating the solution. Solanine has a very bitter, nauseous taste, but it appears from recent experiments to possess little or no medicinal properties.

Poisonous Effects.—Every part of the plant is poisonous. According to Wepfer, three children, upon eating the berries, were suddenly siezed with cardialgia, sickness, and delirium, accompanied with spasms and remarkable distortions of the limbs.

Medical Properties.—The results of experiments to ascertain the real virtues of this plant are very discordant. According to Mr. Gataker, who in the year 1757 published "Observations on the internal use of the Solanum," it is a powerful narcotic, sudorific, cathartic, and diuretic. Lately, it has been made the subject of experiment, by Orfila, who found its extract to possess nearly the power and energy of lettuce-opium.† Internally, it has been found serviceable in cancerous and scrofulous ulcers, in some cutaneous affections, and in dropsies. Externally, used as a fomentation, it is advantageously employed as a discutient and anodyne, in various affections of the skin, tumours, glandular swellings, and scrofulous and ill-conditioned sore. The *dose* of the powdered leaves is from one to three grains. The Solanum *fuscatum* appears to be more active than either of our native species, as fifteen berries, according to Duval, have caused hurried breathing and vomiting. The Solanum *mammosum* seems also to be a powerful plant, as according to M. Desalleurs, the tunics of the fruit have been known to produce vomiting, giddiness, and confusion of mind.—*Journ. de Ch. Med.*

* *Bulletin de la Scient. Med. d'Emul.* Mars. 1821. † *Toxicologie Generale*, ii. p. 190.

DIGITALIS PURPUREA.

Purple Foxglove ; or Folksglove.

Class XIV. DIDYNAMIA.—*Ord.* II. ANGIOSPERMIA.

Nat. Ord. LURIDÆ, *Lin.* SCROPHULARIÆ, *Juss.* SCROPHULARINEÆ, *De Cand.* SCROPHULARIACEÆ, *Burn.*

GEN. CHAR. *Calyx* 5-cleft, irregular. *Corolla* bell-shaped, obliquely 4 or 5-lobed, unequal, ventricose beneath. *Capsule* ovate, acuminate, 2-celled, and many seeded.

SPEC. CHAR. Segments of the *calyx* ovate, acute; *corolla* obtuse, upper lip scarcely divided; *leaves* ovate, lanceolate, crenate, downy.

Syn.—Digitalis purpurea. *Lin. Sp. Pl.* 868; *Willd.* v. 3. 283; *Fl. Brit.* 665; *Raii. Syn.* 283; *Ger. Em.* 790. *f.* i.; *Bull. Fr.* t. 21.
Digitalis, n. 330. *Hall. Hist.* v. 1. 143.
Campanula sylvestris, seu Digitalis. *Trag. Hist.* 889. *f.*
FOREIGN.—*Digitale pourpree.* Fr.; *Guantelli,* Ital.; *Dijital,* Sp.; *Digital,* Portug.; *Der gemeine Fingerhut,* Ger.; *Fingerbor,* Swed.; *Naperstok,* Russ.; *Vingerhoed,* Dutch.

FOXGLOVE, a corruption of *Folksglove*, an orthography which should be restored, may be considered not only as the most beautiful and conspicuous of our indigenous plants, but as one of the most valuable articles of the materia medica. It is equally remarkable for its stately growth, its elegant flowers, and its powerful effects on the animal economy. It is a biennial plant, growing abundantly in most parts of the island, particularly in the northern counties, on hedge-banks, and uncultivated places, delighting in a sandy or gravelly soil. We have found it, but in no great plenty, in most of the woods near London; but Sir James E. Smith affirms that it rarely, if ever, occurs in Norfolk or Suffolk. It flowers in June and July.

The name Digitalis, derived by Fuchsius, who first gave it to this plant, from *digitabulum*, a thimble, has an evident reference to the finger-like flowers of the plant; a similitude which has been recognized in almost every country in which it is found; as may be seen by the names, Fingerbor, Fingerhut, Vingerhoed, Digital, &c., given to it by the Spaniards, the Dutch, the Germans, and the Swedes. Mr. Rootsey in a very interesting commentary on the medical plants mentioned by Shakspeare, communicated to the Medico-Botanical Society of London, and which will be shortly published in their Transactions, expresses an opinion that this plant is the "long purples" of the poet, an opinion contrary to that generally maintained, some species of orchis being in general referred to. He says, "the names of *Foxglove* or *Folksglove*, *Finger flower*, or Digitalis, and dogs' fingers, as the plant is called in Wales, together with the magnificent spike of purple flowers borne by the digitalis *purpurea*, induce me to conjecture that it is alluded to by our illustrious poet as *long purples*.

> "There is a willow grows ascant the brook
> That shews his hoar leaves in the glassy stream;
> There with fantastic garlands did she make,
> Of crow-flowers, nettles, daisies, and long-purples,
> That liberal shepherds give a grosser name,
> But our cold maids do *dead men's fingers* call them."
>
> *Hamlet*, iv. 7.

This question, however, still remains unsettled, for as the writer adds:—

> "The common *blue-bells* to which Salisbury attached the epithet *festalis*, might perhaps be thought to be the garland flowers of Ophelia; but Lightfoot says, it is the orchis mascula; though Martyn considers that the name of *dead men's fingers* would better apply to the palmated species."

Foxglove rises with a round, erect, downy, and generally undivided stem, to the height of three or four feet. The root is whitish, and consists of numerous long and slender fibres. The lower leaves are large, ovate pointed, on short winged footstalks, and spreading upon the ground; the cauline ones are alternate, or elliptic-oblong, somewhat decurrent; and both

kinds are downy, much wrinkled, crenate, and of a dull green colour on the upper surface, and paler underneath. The flowers are numerous, on short footstalks, drooping, of a bright reddish or purple colour, and terminate the stem in an elegant pyramidal spike. The calyx is divided into five acute segments; the upper one narrower than the rest: the corolla is bell-shaped, hairy, and spotted within, inflated on the lower side, and contracted at the base; the upper lip is slightly cloven, emarginate, and smaller than the lower one. The filaments are awl-shaped, inserted into the base of the corolla, bent downwards, and supporting large, oval, deeply cloven anthers; the germen is ovate, pointed, having a simple style with a bifid stigma closed in the early stages, but opening as the flowers arrive at puberty. The capsule is ovate, acuminate, the length of the calyx, bilocular, with two valves, containing numerous small, oblong, brownish seeds. A variety with white flowers is cultivated in gardens, as an ornamental plant.—Fig. (*a*) represents the germen and pistil; (*b*) the corolla cut away to show the insertion of the filaments, and the position of the anthers; (*c*) the calyx.

Although this plant is so elegant and stately in its appearance, it does not appear to have attracted the attention of the ancients. Fuchsius, in his *Hist. Stirp.* 1542, is the first author who notices it: and from him it received the name of Digitalis, in allusion to the German name of *Fingerhut*, which signifies a finger-stall, from the blossoms resembling the finger of a glove. All parts of the plant have at different times been used, and we understand that the flowers are still preferred by some practitioners in the west of England. It was first introduced into the London Pharmacopœia in 1721, (*folia, flores, semen,*) was discarded in the ensuing edition of 1746, and has been since restored; having encountered a like alternation of favour and proscription in the Edinburgh College.

Our own countrymen have long been aware of some of its most self-evident effects, for according to Gerarde, p. 647, "boiled in water or wine and drunken, it doth cut and consume the thicke toughness of gross and slimie flegme, and naughtie

humours. The same, or boiled with honied water and sugar, doth scoure and clense the brest, ripeneth and bringeth forth tough clammie flegme. It openeth also the stoppage of the liver, spleene, and milt, and of the inward parts:" and Parkinson not only recommended it to be externally applied to scrophulous diseases, but extols it as an expectorant, and "to clense and purge the body both upwards and downwards of tough flegme and clammy humours." He also states, that it is "effective against the falling sickness." Dr. Withering never observed any of our cattle to eat it.

Qualities and Chemical Properties.—The leaves of Digitalis should be collected just as the plant is about to blossom, and the same advice which we gave respecting the drying and perservation of Conium *maculatum*, applies equally to them; and those plants should be preferred for medicinal purposes which grow wild in elevated situations exposed to the sun. For although the beauty of the foxglove has made it a denizen of our gardens, its properties are much impaired by cultivation, especially in damp or shady situations. When properly dried, the leaves have a slight narcotic odour, and a bitterish nauseous taste. When reduced to powder, they are of a beautiful green colour, which will be preserved by exclusion from light and air. The active principle has been separated by M. le Rayer, and is termed *Digitaline*. It is inodorous, very bitter, deliquescent, and soluble in water, alcohol, and ether; and is decomposed by heat. He procured it by digesting the leaves in ether, both cold and warm, and treating the solution with hydrated oxide of lead; or the infusion may be evaporated to the consistence of an extract, which, if dissolved in distilled water, will part with some chlorophylle: and if the solution, which reddens litmus paper, be acted on with acetate of lead, filtered, evaporated, and again treated with ether and re-evaporated, the result is *Digitalia*.

"This saline substance is conjectured to be the active principle of the leaves of the Digitalis *purpurea*; but (as Thompson says,) it is probably a compound substance, and the product of the process by which it is obtained. The determination of this point (he continues,) is fortu- a matter of little moment, as the leaves of the Foxglove, when

properly dried and well preserved, are active in such small quantity, that little benefit would result from a separation of their active agent.

"When one ounce of the leaves of Foxglove are acted on by alcohol, the spirit takes up about gr. xx, and leaves, on evaporation, a green matter resembling tallow in consistence, bnt rather more tenacious, and having a disagreeable virulent smell. It does not furnish ammonia by distillation, and is not acted upon by acids. This must not be confounded with the Digitalia already described, which is a brown, pitchy deliquescent substance, capable of being crystallized, but not affording regular, crystals, and scarcely ever obtained in a crystalline state. M. Pauguy has also obtained from Digitalis a white crystalline substance, in fine acicular crystals, insoluble in water, but soluble in alcohol and ether. As it does not display any of the virtues of the plant, I shall not (continues our author) make any comments upon it."

Digitalis also appears to contain extractive resin, and some saline matter. Both water and alcohol extract the virtues of the leaves, but boiling them impairs their power. Precipitates are produced by *sulphate of iron*, acetate of lead, and the infusion of yellow bark, &c. which are *incompatibles* in mixtures containing Digitalis, if used medicinally; but the latter is an excellent antidote to counteract the baneful influence of an over-dose.

Poisonous Effects.—When taken in an over-dose, or injudiciously administered, it produces vertigo, drowsiness, vomiting, and purging; increased secretion of urine with frequent desire to empty the bladder, and sometimes inability to retain it; occasionally, however, the urine is suppressed, and profuse salivation supervenes; the pulse also intermits, is slow, and exceedingly depressed. Delirium, hiccough, cold sweats, indistinct vision, convulsions, and syncope, terminate the scene. Perhaps its poisonous effects may be best described by examples.

Case 1st.—Dr. W. Henry was called, in October 1809, to assist a female, an out-patient of the Manchester Infirmary, labouring under dropsy, who had taken an overdose of decoction of Foxglove. It was prepared by boiling two handfuls of the leaves in a quart of water, and then pressing the mass, so as to expel the whole of the liquor. Of this, at seven A. M. she drank two tea-cups full, amounting in the whole to not less than ten ounces by measure. Before eight, she began to be sick, and vomited part of the contents of her stomach. Enough, however, was retained to excite vomiting and retching throughout the whole of that and the following day, during which, every thing that was taken was instantly rejected. In the intervals of sickness she was excessively faint, and her skin was covered with a cold sweat. The tongue and lips swelled, *and there was a constant flow of viscid saliva from the mouth. Very little urine was voided on the day she*

took the Digitalis, and on the following days the action of the kidneys was entirely suspended. When Dr. Henry saw her, which was forty-eight hours after she had taken the poison, the tongue was white, the ptyalism continued, though in a less degree, and the breath was fœtid. The pulse was low, irregular, (not exceeding forty,) and after every third or fourth pulsation, an intermission occurred for some seconds. She complained also of general pains in the limbs, and cramps in the legs. By the use of effervescing draughts, and ether with ammonia, she gradually recovered her imperfect health. Dr. Henry remarks, that she had not taken any mercury, and that the ptyalism was entirely the effect of Digitalis.*

This case is exceedingly interesting It proves how carelessly medicine of the most deleterious description is frequently administered, even in our charitable institutions; and it confirms the power of Digitalis upon the salivary glands, which Dr. Withering supposed that it sometimes excites. Dr. Barton, of America, also has known it to produce salivation on several patients.

A very interesting though fatal case, which arose from an overdose administered by a quack doctor, and which became the ground of a criminal trial at London, in 1826, is abridged by Dr. Christison from the same journal.

2d.—Six ounces of a strong decoction were taken as a laxative early in the morning. Vomiting, colic, and purging, were the first symptoms; towards the afternoon lethargy supervened; about midnight the colic and purging returned; afterwards general convulsions made their appearance, and a surgeon, who saw the patient at an early hour of the succeeding morning, found him violently convulsed, with the pupils dilated and insensible, and the pulse slow, feeble, and irregular: coma gradually succeeded, and death took place in twenty-two hours after the poison was swallowed. The post mortem appearances are very imperfectly recorded in this case; and this is the more to be regretted, as an hiatus here remains in the toxicological history of the drug, that much wants filling up.

3d.— It is sometimes customary, in pharmaceutical laboratories, to leave tinctures upon the dregs, after they have stood a due time, and gradually to pour off the clear part for use; the dregs are afterwards pressed out, and the last portion of the tincture acquires, by this careless proceeding, double the strength of the first. A person suffering under hydrothorax, who had been in the habit of taking forty drops of tincture of Digitalis every night, went from home without his medicine, and was obliged to send to an apothecary in the country for an ounce of the tincture, of which he took his accustomed dose: its effects were much more violent than usual, and he died, exhausted by repeated fainting, in the morning."

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* *Edinburgh Medical and Surgical Journal*, vol. viii. p. 146.

4th.—Mr. Brande in his Elements of Pharmacy, observes, "I know an instance of a person who suffered under anasarca of the legs, and who applied for relief at a Dispensary, where he received a box of pills, one of which he was directed to take three times a day. On the evening of the third day, he complained of great debility and faintness, and in the course of the night vomiting and fainting fits came on: in the morning he died, upon attempting to get out of bed."*

These cases, as well as many others which could be adduced, prove the imperious necessity of closely watching the effects of this medicine.

Boerhaave and Haller were aware of its poisonous qualities: and M. Salerne, of Orleans, gave continued doses to a turkey; an interesting account of which may be found in *Hist. de l'Acad.* 1748, p. 84. On opening it, he found the heart, lungs, liver, and gall-bladder shrunk and contracted: the stomach was quite empty, but not deprived of its villous coat.

Orfila also made an extensive series of experiments upon animals, with the powder, extract, and tincture of the leaves of foxglove, and from these it appears to cause, in moderate doses, vomiting, giddiness, languor, and death in twenty-four hours, without any other symptom of note; but in larger doses, it likewise produces tremors, convulsions, stupor, and coma. It acts energetically both when applied to a wound, and when injected into a vein. *Christison from Toxicol. Gen.* ii. 286.

Treatment.—The effects of Digitalis must be combated by cordials; as, for example, brandy, punch, aromatic confection, and ammonia. As the infusion of yellow bark, (Cinchona *cordifolia*) forms an insoluble precipitate with both tincture and infusion of foxglove, it becomes an excellent antidote, and may be administered in large doses, or as a diluent to wash out the stomach. Small doses of opium have been found useful, and the dormant powers must be roused by frictions, blisters, cold affusions, &c. Should neither vomiting nor purging have been produced by the poison, they must be excited by appropriate medicines; or, as in all similar cases, when at hand, the stomach-pump should be resorted to in the first instance, to remove the offending matter.

* Brande's *Elements of Pharmacy*, p. 80 and 81.

Medical Properties and Uses.—Were all that has been written on Digitalis to be collected, a ponderous volume of contradictions would be the result; for although the known virtues of the plant may be stated in a very small compass, it was at one time held forth as a never-failing remedy in the worst and most common of diseases—pulmonary consumption. It was of course prescribed by almost every practitioner throughout the United Kingdom; but time, which settles down the minds of men to a just appreciation of the truth, has proved that it is only in the incipient stages of tubercular consumption, when inflammatory action has been subdued by other means, or in the advanced stages when the pulse shows that bleeding has diminished the chronic inflammation of the substance of the lungs, that the sedative effects of Digitalis, which are so benign and truly valuable, can be advantageously produced. And even in such cases as these, although we call in to our assistance all the valuable auxiliaries of season, air, clothing, and diet, we shall often be disappointed: and debility, which we wish to control or prevent, will too often appear to be accelerated by it.

M. Neuman of Berlin recommends the administration of an infusion of the leaves (two ounces of the dried leaves to six ounces of boiling water) to be given in doses of a spoonful every hour, in chronic catarrh, and to be persevered in until nausea, or a sense of constriction of the throat, or irregularity of pulse, follow. We can speak from experience of its beneficial effects in such cases, even when administered much more sparingly.

The direct power that it exerts over the heart, whereby the pulse is reduced both in power and velocity, entitles it to our notice, as one of the most important of our indigenous medicines. And although its "utility in affections of this viscus has been questioned, experience has confirmed its efficacy in hypertrophy of the left ventricle, with or without dilatation of its cavity; it diminishes the action of the diseased organ, and with this the vertigo, pulsation of the head, singing in the ears, and other sympathetic affections of the encephalon attendant upon this state of the heart."—*Thompson.*

We fear, however, that its effects in inflammatory diseases, and

fevers, are not sufficiently known; for although it was formerly used,* and Dr. Clutterbuck recommends it in typhus, and other forms of fever, it is not very generally prescribed.

Foxglove has been usually regarded as a direct sedative, but from the experiments and observations of Dr. Hallaran, it is shown to be rather a narcotic, first producing stimulating and afterwards sedative effects. This fact was first noticed by Dr. H. in a case of mania, where the tincture of Digitalis had been given in mistake for tincture of opium; and taking advantage of this discovery, he used it with great success, in such cases of mania where the action of the circulating system needed excitement and where narcotics were required. Subsequent experiments have fully borne out the observations of Dr. H., and it is now well known that in doses of from half a grain to two or three grains of the powder of the leaves, it excites the brain and alimentary canal powerfully; and that its sedative or depressing effects on the circulating system are secondary. According to the Leipsick experiments, as quoted by Dr. A. T. Thompson, giddiness, dull headache, heat of the face, dullness of sight, and intoxication, indicate its influence on the brain, while its operation on the alimentary canal is shown by heat in the pharynx, colic, and costiveness: and the subsequent depression of the circulation, and small feeble pulse, are sufficient evidences of its secondary or sedative effects. It is only by distinguishing these two stages of its operation, that the contradictory accounts of the influence of Digitalis can be reconciled, or those cases in which it can be beneficially employed be critically known from those in which its exhibition would be injurious.

As a diuretic, it is much used and highly prized, being more powerful and certain in its effects than any other. Withering affirms, that it is most successful in those cases of dropsy, in which debility is completely marked, and when the countenance is pale, the pulse weak, and the muscular energy diminished; while in an opposite state of the system it is more liable to fail.

* Somersetti Angliæ rustica turba hujus decocto febricitantibus, purgationes et interdum superpurgationes et vomitiones humidioribus alvo molitur.—*Raii Historia Plantarum, art. Digitalis.*

These observations are very often borne out by experience; and in the latter state of constitution, the exhibition of squills, of cream of tartar, and other debilitating agents, or copious bleedings to effect a reduction of strength, will frequently ensure its diuretic effects. How these effects are produced, it is difficult to ascertain, for when administered to a person in good health, the secretion of urine is not increased. We must therefore suppose, that it exerts no direct action on the kidneys, but that the *diuresis* must be ascribed to a balancing or correction of the secreting and absorbent systems; the latter being stimulated not only to regain their lost power, but to act with a force sufficiently great to carry off the effused fluid. Should it produce nausea or purging, its diuretic effects will be impaired. Withering advises us to give the powder in a dose from one to three grains, or an ounce of the infusion every eight hours, when the constitution is robust. These doses are to be continued until the medicine acts on the kidneys, the stomach, the pulse, or the bowels; and is to be stopped on the first appearance of such effects.

Dr. Murray's remarks on this part of the subject are so valuable, that we make no apology for transcribing them.

"Though Withering enjoined strictly the caution necessary in the use of Foxglove, the doses prescribed in his directions are perhaps rather large: and the propriety of the method which has sometimes been recommended, of progressively increasing the dose until the effects are obtained, is doubtful. If the dose be at first small, or at least, if having been raised to one grain of the powder, or one ounce of the infusion, twice in twenty-four hours, it be continued at this quantity, the diuretic operation will be obtained in no long time without any unpleasant symptom, and when it commences, will continue of itself, even though the dose is suspended. Or if, from peculiarity of habits, or the state of disease, the dose requires to be increased, it ought to be done slowly, and without that regularly progressive augmentation which has been recommended. And if the effects begin to cease before the reduction of the dropsical swelling be completed, it may be easily renewed by a repetition of this moderate dose. This mode of administering Foxglove is that suggested by the nature of its action. The peculiarity which is characteristic of it, is its tendency to accumulate in the system, its effects not appearing for a time, but at length being suddenly induced. There is no necessity, therefore, to increase its dose, or to give one that is large, with the view of speedily inducing its action, since from its continued administration this will in no long time be established, and without that hazard which is otherwise incurred from this peculiarity in its operation."

It does not appear to be very useful in ovarian dropsy, nor in hydrocephalus internus, or water of the brain; and in hydrothorax, or dropsy of the chest, however valuable, it is a doubtful remedy; for it too often sinks the pulse, and diminishes the vital energies generally; and is particularly distressing from its producing nausea, and endangering deliquium; results which ought more especially to be guarded against in dropsy of the chest, as it is, in most cases, not merely a disease of debility, but of enfeebled age. When the full effects of Digitalis are exerting themselves, it is advisable that the patient should be kept in a recumbent posture, as many sudden deaths are on record, which are attributable to a neglect of this precaution; for "upon any sudden, and often upon any trifling exertion, the pulse immediately quickens, the heart throbs violently, nausea and fainting come on, and persons under the full influence of Digitalis have not unfrequently died suddenly under such circumstances." When opium disagrees Digitalis may be substituted for it in cases of diarrhœa, and should always be preferred where there is any disposition to inflammation of the mucous membrance of the bowels. Palpitation of the heart, phlegmasia dolens, aneurisms and pneumonia after bleeding, are often relieved by it; and in the acute stages of gonorrhœa virulenta, it is a valuable medicine. Cases of its success in epilepsy have been lately recorded; and in conjunction with copious bleeding, in a case of that rare disease, Paruria inops, in which there is no secretion of urine, and where the patient generally dies in a few hours from serous apoplexy, it effected a cure. "It has also been found of the greatest service when conjoined with nitrous acid, in the dropsy which occurs in broken down constitutions that have been harassed by mercury; but will not cure a dropsy attended with palsy, unsound viscera, or other complications of disease: but by allaying the urgency of the symptoms, it gains time for other medicines to act."

Formerly it was externally applied by fomentations and ointments; and so highly was it prized by the Italians, that they have the adage. "Aralda tutte le piaghe salda," Foxglove cures all wounds. It is now fallen into disuse, although strongly re-

commended by Murray,* Hulse, and other eminent practitioners. The infusion of Digitalis is a good form of administration in dropsy; or should the powder be given, it must be prescribed in the form of a pill, as in an interesting case, by E. Chantourelle,† it remained several days in the stomach, adhering closely to the parieties of that organ, and producing violent and dangerous effects. Its existence in the bowels was proved by its appearance in the dejections. The root has been occasionally used, but as the plant is biennial, it cannot be depended on.

As boiling much impairs the power of Digitalis, the Dublin formula of decoction is the worst that could have been devised, without the object of the College was to moderate its effects, and even then it would be a most uncertain method. Upon the other preparations Dr. A. T. Thompson makes the following pertinent remarks. "The Pharmacopœias order an infusion and a tincture of Digitalis; but there is great uncertainty in both preparations; owing to the careless manner in which the leaves are frequently dried; and the only advantage of even a correct analysis of the plant would be the obtaining a vehicle which should always ensure a preparation of a definite strength. As far as my experiments enable me to decide, I am disposed to think that such a vehicle will be found in ether, which takes up the whole of the colouring matter, and when the solution is evaporated, leaves a green principle, possessing in a high degree the properties of the plant. The solution of this in alkohol might be employed with advantage." *Mat. Med.* i. 580. An instance in point is recorded by Dr. Williams, who says that "two ounces of the tincture of the London College have been taken in two doses, with a short interval between them, yet without causing any inconvenience."

Off. Prep.—Decoctum Digitalis. *D.*
Infusum Digitalis. *L. E.*
Tinctura Digitalis. *L. E. D.*

* Murray *Apparat. Med.* i. p. 491. † *Journal Général de Médicine*, October 1822.

XIX

PARIS QUADRIFOLIA.

Herb Paris, One-berry, or True-love.

Class VIII. OCTANDRIA.—*Order* IV. TETRAGYNIA.

Nat. Ord. SARMENTACEÆ, *Lin.* ASPARAGI, *Juss.* SMILACEÆ, *R. Brown.* SMILACEÆ PARIDEÆ, *Bart.*

GEN. CHAR. *Calyx* 4-leaved. *Petals* 4. *Berry* 4-celled, superior. *Seeds* several, biseriate.

SPEC. CHAR. *Leaves* whorled, ovate, usually four.

Syn.—Herba Paris. *Raii. Syn.* 264, 1; *Ger. Em.* 405. *f.*; *Park. Theatr.* 390; *Camer. Epit.* 835. *f.*

Paris, n. 1006. *Hall. Hist. v.* 1. 429.

Solanum quadrifolium bacciferum, *Bauh. Pin.* 167.

Uva lupulina, seu Aster, *Trag. Hist.* 307. *f.* 308.

Aconitum pardalianches, *Fuchs. Hist.* 87. *f.* Ic. 48. *f.*

Paris quadrifolia, *Lin. Sp. Pl.* 526; *Willd. v.* 2. 471; *Fl. Brit.* 431.

FOREIGN.—*Parisette*; *Raisin de renard*, Fr.; *Parisetta*, Portug.; *Uva di volpe*, It.; *Ubas de zorro*, Sp.; *Die Einbeere*, Ger.; *Wolfsbetie*, Dutch; *Elbær*, Dan.; *Trollbar*, Swed.; *Woronei glas*, Russ.

OF the genus Paris, two species only are known, Paris *quadrifolia*, which is a native of most countries of Europe, and Paris *polyphylla*, a plant which has lately been discovered in Nepal. The former is a perennial plant, growing in groves and moist woods in many parts of Britain, but rare. It occurs plentifully in a grove at Cossey, near Norwich, and was found by Mr. Miller, in a wood near Hampstead; by Mr. Blackstone, in Hanging-wood, near Hareford, Middlesex; at Selborne, in Hampshire, by Mr. White; at Kimbolton, by our friend Mr. Fernie; and in Scotland, in a wood, about a mile south of Newbattle, near Dalkeith, by Dr. Parsons. It flowers in May and June.

The rhizoma is creeping. The stem rises about a foot high; it is simple, erect, smooth, round, and naked, except at top. The leaves, whose number is usually four, sometimes five or six, are ovate, pointed, entire, smooth, of a dull green colour, with three principal veins, and spreading horizontally in a sort of whorl on the top of the stem. The flower is solitary, on an erect angular

peduncle, about an inch in length. The calyx consists of four lanceolate green leaves: the corolla of four linear acute ones, of a similar colour, and both remain till the fruit be ripe. The stamens, eight in number, have short filaments; the anthers, which are long, are inserted on both sides into the middle of the subulate threads, which continue beyond their apices. The germen is somewhat globular, of a violet colour, supporting four styles shorter than the stamens, with simple stigmata. The fruit is a purplish-black, four-celled berry, containing in each cell six or eight seeds in a double series. The generic name *Paris*, derived from *par*, equal, is said to have been given to the plant in reference to the regularity of its parts, four, or its multiples, prevailing both in the foliage, the flowers, and the fruit.

The figure represents an entire plant with its creeping root, four leaves, and four-fold single flower; (*a*) the flower separate, with its 4 sepals, 4 petals, 8 stamens, and 4 stigmas; (*b*) the berry entire, with the persistent perianth; (*c*) a section of the same to show the 8 seeds; (*d*) the germen separate, with its 4 styles; (*e* & *f*) seeds.

Qualities.—The leaves have a narcotic odour, and a peculiar taste, which is not disagreeable.

Medical Properties.—Herb Paris is one of the tribe of vegetables called narcotic, which, when received into the stomach in any considerable quantity, produces violent effects upon the nervous system, such as nausea, vomiting, vertigo, delirium, and convulsions; hence it has been ranked by most writers on the materia medica, among the class of poisons. Every part of the plant seems to possess this property, but the leaves and berries are supposed to be the most active. Linnæus assures us that the root, in doses of twenty to forty grains, operates as a gentle emetic, like ipecacuanha. MM. Coste and Willemet, who have investigated, with considerable ardour and success, the properties of plants indigenous to France, also recommend the root, in doses of from one to two scruples, as a substitute for that useful medicine. They state, that it sometimes operates as a purgative. Gesner asserts that the berries prove noxious to poultry; and Krocker was credibly informed, that a child died in consequence of eating them. Bergius recommends the herb to be used externally in fomentations as a discutient, and internally as an antispasmodic, in the hooping cough, and various convulsive diseases. Parkinson says, "the roots boiled in wine help the colic, and the leaves applied outwardly repress tumours and inflammations." The root of the exotic species, Paris *polyphylla*, is known to be a very active poison.

XX

TUSSILAGO FARFARA.

Class XIX. SYNGENESIA.—*Order* II. POLYGAMIA, SUPERFLUA.

Nat. Ord. COMPOSITÆ RADIATÆ, *Lin.* CORYMBIFERÆ, *Juss. De Cand.* COMPOSITINÆ, CORYMBIACEÆ, *Burn.*

GEN. CHAR. *Involucre* simple, scales linear, equal, numerous, submembranaceous, tumid at the base. *Receptacle* naked. *Flowers* radiant, circumferential numerous, with the *corolla* long, those of the disk few. *Pappus* hairy. *Seeds* compressed. *Florets* ligulate, toothless.

SPEC. CHAR. *Scape* 1-flowered, scales imbricated. *Leaves* cordate, angular, toothed, tomentose beneath.

Syn.—Tussilago. *Raii. Syn.* 175. 1.; *Ger. Em.* 811. *f.*; *Park.* 1220; *Camer. Epit.* 590, 591. *f.*; *Bauh. Hist.* v. 3. p. 2. 563. *f.*; *Matth. Valgr.* v. 2. 198. *f.*; *Dalech. Hist.* 1051. *f.*; *Fuchs. Hist.* 140. *f.*

Petasites. *u.* 143, *Hall. Hist.* v. 1. 62.

Ungula caballina. *Trag. Hies,* 418. *f.*; *Brunf. Herb.* v. 1. 42. *f.* 41.

Bechium. *Tillands, Ic.* 24. *f.*; *Cord. Hist.* 93. 2. *f.*

Tussilago Farfara. *Lin. Sp. Pl.* 1214; *Willd.* v. 3. 1967; *Fl. Brit.* 878; *Hook. Scot.* 242; *Bull. Fr. t.* 329; *Woodv. t.* 13.

PROVINCIALLY.—*Fole's-foot*; *Colt'sfoot*; *Horse-hoof*; *Bull's-foot.*

FOREIGN.—*Tussilage*; *Pas d'Ane*, Fr.; *Farfara*, It.; *Una de cabello*, Sp.; *Tussilagem*, Port.; *Huflattisch*, Ger.; *Dwoje liisknik*, Russ.; *Hoefblad*, Dutch.

COLT'S-FOOT is one of the most common of our native plants, being found in profusion in most parts of the kingdom, and throughout Europe; growing in moist, shady situations, especially on a chalky, or marly soil, in waste places, on the banks of rivers, and in gardens, where it frequently proves a very troublesome weed. The clayey parts of the pestilential maremmes of Tuscany, where scarcely any other plants will grow, are covered with common colt's-foot. It is a perennial, flowering

from the middle of March to the end of April; but the leaves do not appear in full luxuriance till the month of May. The name Tussilago is derived from *tussis* and *ago*, in allusion to its pectoral powers, and Farfara, from the resemblance its leaves bear to those of the white poplar, called by the Greeks, Farfarus.

The root is very long, frequently penetrating to the depth of several feet, and sending out many slender fibres, which creep horizontally. The scape, or flower stem, appears before the leaves; it is erect, slender, round, woolly, slightly furrowed, six or eight inches high, and clothed with numerous lanceolate scales. Several stems generally issue from the same root, each supporting a single flower, about an inch in diameter, and of a bright yellow colour. The colour of the stem, as well as the scales, varies from pale green to reddish brown, as is well represented by the accurate pencil of Mr. Clarke, in the two varieties figured in the plate. The leaves are radical, cordate, on channelled footstalks, slightly lobed, and toothed; smooth above, with reddish veins; but white and woolly underneath: when young, the leaves are revolute, and covered with a cottony down which easily wipes off. The scales of the involucrum are lanceolate-linear; equal to the length of the disc; erect at first, but afterwards become reflexed. The inflorescence is compound; the florets of the ray are ligulate, and very numerous, always fertile, and twice the length of those of the disc, which are few in number and often barren; the central florets are tubular, with five equal segments. The achenopsides are smooth, oblong, compressed, and the seeds often abortive. The pappus is pilose, silvery, sessile, and permanent. The receptacle is naked, flat at first, but afterwards becomes convex. Fig (*a*) represents a floret of the ray with the bifid pistil; (*b*) a floret of the disc, both slightly magnified; (*c*) the fruit, which is an achenopsis, with its pappus or down; (*d*) a floret of the disc, much magnified and spread; showing the situation of the pistil, with the five united anthers, and the insertion of the filaments into the tube of the corolla. The stem on the right exhibits the situation of the fruits, with their hairy crowns, and part of the naked receptacle from whence they have been removed.

The beautiful wing-like pappus with which the seeds are so plentifully provided, renders Colt's-foot peculiarly a plant of passage; and no sooner is a fit soil exposed, than it becomes covered with young plants of Colt's-foot, although none may have previously been growing within many miles. This has led sometimes to the ignorant belief, that this plant is generated spontaneously by clayey soils, the facility with which its seeds are transported either not being known, or not being duly considered. It is, however, one of many such admirable provisions of nature, that plants with long penetrating roots, such as thistle, colt's-foot, &c., should be furnished with ready means of migration, and that they should flourish chiefly in clay-bound soils, which they thus, by their burrowing roots, perforate and drain.

Qualities.—The root is mucilaginous and bitterish; the leaves are inodorous, and have a rough subviscid taste like that of artichokes. "The mucus they contain is yielded to water by decoction, and evolves, by boiling, a peculiar odour."

Medical Properties and Uses.—The dried leaves of this plant generally form the basis of British herb tobacco, and amongst the ancients it was famed for its pectoral and vulnerary properties. Dioscorides,* Pliny, and Galen,† recommend it to be smoked through a funnel or reed, and in a work, "*De Internis Affectionibus*," Ed. Fæs. p. 532. l. 34, attributed to Hippocrates, the root, βηχιον, taken in honey, is recommended for ulcerations of the lungs. Dr. Cullen, on the authority of Fuller, employed its expressed juice in scrophulous cases, administering several ounces a day; and in some instances he thought that it favoured the healing of scrophulous sores: subsequent experience, however, has not confirmed its power over the lymphatic system. During the last century, both the leaves and the flowers were recommended for their demulcent and ex-

* "Folia suffita vero sicca, ita ut ex iis fumus per infundibulum, hiante ore excipiatur, hauriaturque eos sanant qui sicca tussi, et orthopnœa infestantur; pectoris etiam vomicas rumpunt. Eundem effectum præbet suffita radix." *Dioscorid. l. c.*

† "Bechium sic nominatum est quod tusses et orthopnœas juvare sit creditum, si quis folia arida aut radicem in prunis urens, ascendentem inde fuliginem inspiratu attrahat." *Galen Simpl. l. c.*

pectorant virtues; and old Gerard, in his "Herball, or General historie of Plants," says, "the fume of the dried leaues taken through a funnel, burned upon coles, effectually helpeth those that are troubled with the shortnesse of breath, and fetch their wind thicke and often, and breaketh without peril the impostumes of the breast. Being taken in the manner as they take tobaco, it mightily preuaileth against the diseases aforesaid." But although Colt's-foot still retains a place in the London Pharmacopœia, it is seldom used; and independently of its mucilaginous qualities, it may be considered an unnecessary and useless article of the materia medica.

A nostrum, which is well known under the name of "Essence of Colt's-foot," consists of equal parts of the *Balsam of Tolu*, and the *Compound Tincture of Benzoin*, to which is added double the quantity of *rectified spirits of wine*. This composition, which contains no Colt's-foot, is certainly one of the most baneful medicines that could have been imposed upon the public in pectoral cases. The injurious tendency of warm resinous substances in pulmonary consumption has been pointed out, in a Dissertation by the late Dr. Fothergill. In a slight cold, the foundation of a suppuration of the lungs is laid by their use, from their increasing the inflammatory disposition, and exciting general fever; and hence it is not improbable, as a popular writer justly remarks, that more fatal cases arise in pulmonary complaints from the officious interference of domestic practice, or the nostrum of the patent warehouse, than from the really incurable nature of such maladies. Consumptive patients who take such an exhilarating, but pernicious cordial, may be compared to a flower on the bank of a river—it blossoms luxuriantly for a season, but the moisture that feeds its roots, undermines its foundation.

Those who wish to exhibit Colt's-foot, on account of its demulcent properties, generally boil a handful of the leaves in two pints of water, to one pint; and the decoction, after being strained, is sweetened with honey or coarse sugar. The dose is a teacupful.

A kind of tinder, or touchwood, is, in some countries, made of the roots, impregnated with nitre.

HELLEBORUS FŒTIDUS.

Fœtid Hellebore, Bear's-foot, or Setter wort.

Class VIII. POLYANDRIA.—*Ord.* VI. POLYGYNIA.

Nat. Ord. MULTISILIQUÆ, *Lin.* RANUNCULACEÆ, *Juss.*

RANUNCULACEÆ HELLEBOREÆ, *De Cand. &c. &c.*

GEN. CHAR. See Helleborus *niger*.

SPEC. CHAR. *Leaves* pedate, glabrous; *Segments* oblong-linear; *Stem* many-flowered, leafy; *Sepals* converging.

Syn.—Helleboraster maximus, *Raii. Syn.* 271.; *Ger. Em.* 976. *f.*
Helleborus niger fœtidus, *Bauh. Pin.* 185.
Helleborus, n. 1193, *Hall. Hist.* v. 2. 87.
Veratrum nigrum tertium. *Dod. Pempt.* 386.
Helleborus fœtidus, *Lin. Sp. Pl.* 784; *Willd.* v. 2. 1337; *Fl. Brit.* 598.
PROVINCIALLY. *Great Bastard* and *Stinking Black Hellebore*, *Helleboraster*, *Settle*, or *Settle-wort*, *Ox-heal*.
FOREIGN.—*Hellebore fœtide*, Fr.; *Elleboro fœtido*, Ital.; *Heliebaro hediondo*, Sp.; *Stinkende Nieswurtzell*, Ger. *Nieskruid*, Dutch; *Nysurt*, Dan.; *Prustrot*, [illegible]

THIS is an evergreen perennial plant, growing naturally in many parts of Britain, on pastures and in thickets, particularly on a calcareous soil. According to Sir James E. Smith, it grows abundantly on the castle hill at Castle-Acre, Norfolk; and Gerarde, who lived in the 16th century, says that it was wild in his time in many woods and shady places in England. Dr. Hooker, in his Flora of Scotland, states, that it occurs also plentifully on the banks of the Clyde at Blantyre Priory; on old walls at Barncluish, in the vicinity of Glasgow; and between Anstruther and Kepply, near Edinburgh; but that it is scarcely indigenous. It is a well-known plant in gardens; flowering in March and April.

The root is small, bent, and surrounded by numerous dark-coloured fibres; the stem rises to about two feet in height;

towards the bottom it is strong, round, naked, and marked with alternate cicatrices, the vestiges of former leaves; is divided, and subdivided into branches, and compressed at the top, producing many flowers. The leaves, which stand upon long channelled footstalks, surrounding the middle of the stem, are divided, as in black hellebore, into several leaflets, usually seven or nine in number, long, narrow, serrated, lanceolated, and of a dark green colour. The scaly leaves, or *bracteas*, placed at each ramification of the flower-stem, are smooth, trifid at the lower part and bifid towards the top; but those near the flowers are ovate, pointed, and of a much paler green than the proper leaves. The several stages of transformation of the foliage from proper leaves to bracteæ is particularly well seen in this plant, where the pedate leaves gradually abort their lobes, and the fimbriate bracteæ, losing their divisions become trifid, bifid, and at last, near the flowers, entire. The flowers are numerous, terminal, drooping, of a pale green, and stand upon long footstalks, forming a sort of panicle: the sepals are five, ovate or heart-shaped, concave, permanent, and tinged at the apex with reddish purple: the petals are eight or ten, minute, tubular, placed in a circle within the sepals, and at the base nectariferous: the petals were mistaken for nectaries by Linnæus, and the true sepals, &c. described by him as petals, the plants being considered then devoid of calyx. The stamens are very numerous, the length of the sepals, supporting white anthers; the germens three or four, becoming beaked follicles like those of black hellebore, containing many small oval seeds disposed in two rows.—Fig. (*a*) represents the stamens, with the situation of the nectariferous petals, (*b*) the capsules, or pods.

Qualities.—The smell of the recent plant is very fœtid, its taste bitter, and remarkably acrid, excoriating the mouth and fauces. "The bracteæ possess these qualities in a greater degree than the proper leaves." The plant loses much of its acrimony by drying.

Poisonous Effects.—When administered in an undue quantity, this plant proves an extremely virulent poison. Its action, although more powerful, seems very much to resemble that of helleborus *niger*; occasioning sickness, vomiting, pain

in the stomach, violent catharsis, convulsions, and death. In Westmoreland, where this plant grows in great abundance, it has obtained, from its pernicious quality, the name of *felon-grass*. From the following fact, related by Mr. Martin, on the authority of Dr. Milne, it would appear that it is also a poison to sheep. Several years ago, when the ground was covered with a deep snow, a flock of sheep in Ox-meadow, near Fulborn, in Cambridgeshire, finding nothing but this herb above the snow, ate plentifully of it. They soon appeared terribly disordered, and most of them died; a few being saved by having a quantity of oil administered to them in time, which made them vomit up the pernicious herb. Some of those which died, on being opened, were found to have their stomachs greatly inflamed. Notwithstanding its deleterious properties, the helleborus *fœtidus* is sometimes employed by the common people, and also by itinerant quacks, for the destruction of worms, and not unfrequently proves fatal. The following account, by a Mr. Cooke of Leigh, in Essex, is taken from the *Oxford Magazine* for 1769, vol. ii. p. 99.

"It is much used by venturesome quacks in decoction and coarse powder to kill worms in the belly, which it never fails to do. But it has a deleterious, poisonous quality, which some bodies cannot overcome, and then it is dangerous. Where it killeth not the patient, it would certainly kill the worms; but the worst of it is, it will sometimes kill both. Wherefore it is so dangerous a drug, it ought never to be internally applied but upon very extraordinary cases, when other anthelmintic medicines have failed, if ever they do, and even then too by a very skilful hand: and yet, alas! nothing is scarcely more commonly used by women, especially in country places, than the decoction, or powder, of this violent vegetable, for the purpose aforesaid. It has been known to kill several youths, and an old woman also, near fifty, in three hours' time. Others, it violently vomits, and renders heart-sick, even to swooning away; and if, through mere strength of nature, they overcome its violent operation and recover, some have lost the hair and the nails from their fingers and toes; and the scarf-skin of the whole body has also peeled off from head to foot thereby—a plain proof of strong poison.

"I had a most melancholy story from a mother in this city, viz. that a country fellow gave some of this plant to his two sons, one of six, the other of four years old, to kill worms; and that before four in the afternoon, they were both corpses."

TREATMENT.—See article Helleborus *niger*.

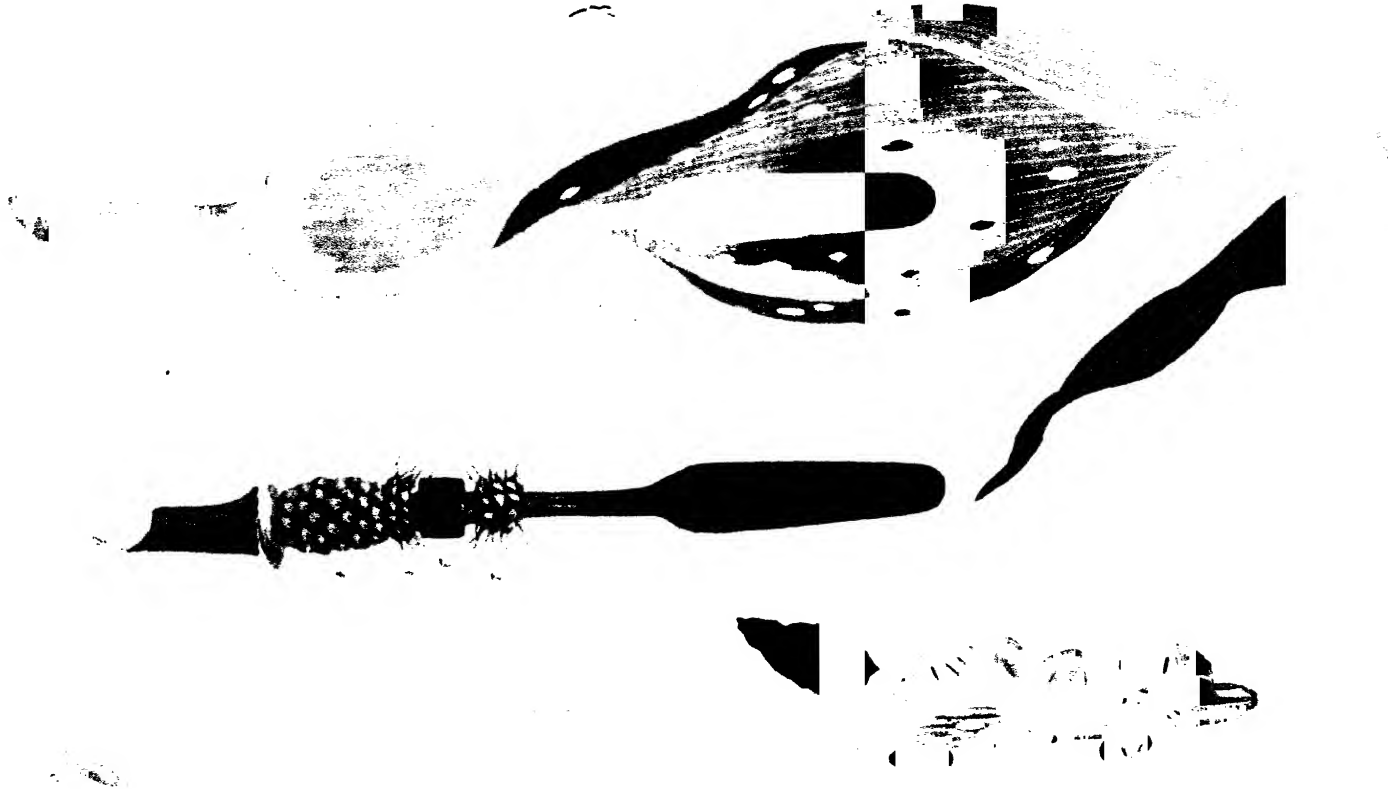
MEDICAL PROPERTIES AND USES.—The whole plant is acrid, and violently cathartic; it sometimes operates as an eme-

tic, and in large doses is highly deleterious. It is used chiefly as a vermifuge; the dried leaves, in powder, are given in ten grains to half a drachm; but its doses do not appear to have been precisely ascertained. The best form for children is a syrup. For this purpose, the bruised leaves are recommended to be first moistened with a little vinegar, then the juice is expressed from the leaves, and made into a syrup with coarse sugar. A tea-spoonful is directed to be given at bed-time, and one or two in the morning, for two or three successive days, increasing or diminishing the dose according to the strength of the patient. In the western counties, according to Dr. Parr, a tincture is sometimes made of the leaves with cyder, and said to be a useful preparation. In whatever way, however, it is employed, says this able physician, no medicine acts with more certainty than bear's-foot as an anthelmintic. The root is often used in veterinary practice for the rowels for cattle; and if the powder of the leaves be applied to an ulcerated surface, a profuse discharge is excited. It is on account of these properties that it is vulgarly called *Ore-heele*, *Setter-wort*, *Setter-grass*, from *settering*, a term used by farriers, and supposed to be a corruption of setoning. Its virtues, as a vermifuge, were known to Gerarde, and it is frequently used as a domestic medicine in Yorkshire; but, in consequence of its violent properties, medical men seldom prescribe it; and it might, with great propriety, be expelled the Pharmacopœia, into which it was introduced at the recommendation of Dr. Bisset, who says,

"It is by far the most powerful vermifuge for long and round worms of any I have yet experienced. The decoction of about a drachm of the green leaves, or about fifteen grains of the dried leaves in powder, is the usual dose for children from four to seven years old. A full or sufficient dose generally proves more or less emetic, and often looses the belly a little. It is usually repeated on two and sometimes three successive mornings: the second dose has commonly a greater effect than the first, and never fails to expel round worms by stool, if there be any lodged in the alimentary canal."

Happily for mankind science is continually enlarging the sphere of our usefulness; and worms, which were formerly considered as the causes of disease, may generally (excepting the *tænia*) be treated as the consequences of disordered primæ viæ, and remedies worse than the malady discarded from practice. Dr. Bisset speaks of the plant as also useful in some asthmatic and hypochondriacal affections. Adamson says, that an injection of an ounce of the decoction of the roots is preferable to every other remedy in epileptic fits, arising from the presence of worms in the intestines.

This species, H. fœtidus, with another the H. *viridis* has often been employed medicinally instead of the true or ancient Greek Hellebore H. *officinalis* of Sibthorpe and Smith.



XXII

ARUM MACULATUM.

Common Arum.

Class XXI. MONŒCIA.—*Ord.* VII. POLYANDRIA.

Nat. Ord. PIPERITÆ, *Lin.* AROIDEÆ, *Juss. De Cand. &c.* AROIDEÆ, CALLACEÆ, *Bart.* ACORINÆ CALLACEÆ, *Burn.*

GEN. CHAR. *Spathe* 1-leaved, cowled, convolute at base. *Perianth* 0. *Spadix* androgynous, naked above, bearing stamens in the middle and germens at the base. *Berry* 1-celled, many seeded.

SPEC. CHAR. *Stem* none. *Leaves* radical, hastato-sagittate, entire. *Spadix* club-shaped, obtuse, shorter than the spatha.

Syn.—Arum *Raii Syn.* 266. *Bauh. Hist.* ii. 783.
Dracontium minus, *Dod. Pempt.* 327.
Arum vulgare, *Ger. Em.* 834. *Park.* 373.
Arum maculatum, *Lin. Sp. Pl.* 1370. *Willd.* iv. 4779. *Fl. Brit.* iii. 1024.
PROVINCIALLY—*Lords and Ladies. Wake Robin. Cuckow-pint.*
FOREIGN.—*Gouet*, Fr.; *Aro*, Ital.; *Aronswurz*, Ger. *Kalfsnoet*, Dutch; *Yaro*, Spanish; *Munkestrauds*, Danish.

THIS is a well-known perennial plant, a native of many parts of Britain, generally growing under hedges, remarkable for its acrimony, and the singular structure of its fructification. "At the first approach of spring," says Sir James E. Smith, "the verdant shining leaves of *Arum* are seen shooting up abundantly wherever any brushwood protects them from the tread of men or cattle. In May, the very extraordinary flowers appear. In autumn, after both flowers and leaves have vanished, a spike of scarlet berries, on a simple stalk, is all that remains; and few persons are aware of the plant to which they owe their origin."

The root is pseudo-tuberous, about the size of a chesnut or larger, with numerous coronal capillary fibres, brown externally, and white and fleshy within. The leaves, which spring immediately from the corona are large, halberd-shaped, entire

smooth, of a dark green colour, frequently spotted, and supported on long-channelled footstalks. The flower-stem is a simple scape, obscurely channelled, and terminated by the spathe, inclosing the parts of fructification. The spathe (*a*) is erect, pale green, sometimes spotted, very concave and pointed. The spadix (*b*) is club-shaped, obtuse, of a deep purple colour; at its base are several roundish germens and a ring of sessile anthers; above each of these are placed rings of many roundish bodies, terminated by longish filaments; these Linnæus called the nectaries: the lowermost rings are believed to be abortive pistils, the upper abortive stamens. The fruit (*c*) consists of several globular berries, of a bright scarlet colour when ripe, crowded on an oblong spike, each berry containing two or more seeds.—Fig. 1 and 3 represent the abortive stamens and pistils, or nectaries; 2, the sessile anthers; 4, the germens.

The modern name *Arum* is a modification of the ancient appellation *Aron*, a word of Egyptian origin and supposed to have belonged to the species now called A *Colocasia*, which present specific name is a corruption of the Arabic *qolqas*.

Qualities.—The root is nearly white, and free from smell. When recent, it is very acrimonious; so much so, that on our tasting a small piece, an insupportable sensation of burning and pricking was produced, which lasted several hours. Applied to the skin, it produces blisters: but its acrimony is lost by drying, which leaves the root a farinaceous substance, that in some countries has been converted into bread; and being saponaceous, is used in France, under the name of *Cypress Powder*, as a cosmetic. Water and spirit abstract the acrid principle, but derive no virtues from it. It is entirely on the acrid properties that its medical virtues depend, and therefore the old formula *Pulvis ari Compositus* finds no longer a place in our dispensatories. "The expressed juice reddens vegetable blues, and has been found to contain malate of lime." Starch has been also prepared from it. Vauquelin found malic acid, in the state of supermalate of lime, in Arum and several other plants.

In some countries, the tuberous roots of many of the Arums, particularly those of A. *Colocasia*, a native of Syria and Egypt,

are dried and eaten by the inhabitants, either roasted or raw. In the West Indies, the leaves of some of the sorts, particularly that of the A. *Esculentum*, are boiled and eaten as greens; hence the names of Indian-kale and esculent Arum, which have been given to this species. The roots of A. *sagittifolium* are also edible; but they are less generally cultivated. Mr. Loudon, in his valuable *Encyclopædia of Gardening*, informs us, that in the Isle of Portland, where the plant is particularly abundant, the common people gather the roots of our spotted Arum, and esteem it as an article of food; and after steeping in water, washing and drying the farinaceous powder procured, is sent to London, where it is sold as Portland sago.

For medical use, Dr. Lewis recommends the roots to be dug up just as the leaves are decaying; and by being put into sand, in a cellar, they may be preserved the greater part of the year.

Poisonous Effects.—Warzel, a German practitioner, has administered the fresh root of Arum to dogs: they died at the end of from twenty-four to thirty-six hours, without any other symptom than dejection, and the digestive canal was found somewhat inflamed.

Bulliard relates the following case: "Three woodman's children ate of the leaves of this plant: they were seized with horrible convulsions. Assistance was procured for them too late; it was impossible to make the two youngest swallow any thing; they were bled without success; clysters were given them, which produced no effect: they died, one at the expiration of twelve days, another at the end of sixteen. The other child was still able to swallow, although with considerable pain, because its tongue was so swelled that it filled the whole cavity of the mouth; but deglutition became free after being bled. The child was made to drink milk, warm water, and especially an abundance of olive oil. A diarrhœa came on, which saved the child; it was pretty well restored in a short space of time, but always preserved a very great degree of leanness."*

Treatment.—Our first object should be, to evacuate the

stomach by the syringe or by emetics of sulphate of zinc or of copper; after which the bowels should be relaxed by the sulphate of magnesia dissolved in almond emulsion, which may be copiously partaken of to allay thirst, and sheath the mucus membrane of the bowels from their acrid contents. Injections of mutton broth may likewise be employed; and small doses of opium frequently administered, after thorough evacuations have been produced. It is very evident, however, from Bulliard's statement, that the principal mischief existed in the throat and tongue; and under such alarming circumstances, we should have applied leeches to the former, or scarified and compressed the latter. Ice might likewise be applied to the same parts. By adopting these active means, deglutition would most probably be restored, and time afforded for a judicious management of the case.

Medical Properties and Uses.—Arum is a very powerful stimulant, and when taken internally, in its recent state, it warms the stomach, excites the activity of the digestive organs, promotes perspiration, and exerts an action on most of the secretory organs. It has, therefore, been given with success, in cachectic, chlorotic, and rheumatic complaints, and in various other affections of torpid and phlegmatic constitutions. Bergius, whose authority is not to be despised, speaks of its success in certain kinds of headache; and intermittents are said to have yielded to it. "If the root be given in powder, great care should be taken that it be young, and newly dried, when it may be used in the dose of a scruple, or more, twice a-day; but in rheumatism, and other disorders requiring the full effect of the medicine, the root should be given in a recent state; and to cover the insupportable pungency it discovers on the tongue, Dr Lewis advises us to administer it in the form of emulsion, with gum arabic and spermaceti, increasing the dose from ten grains to upwards of a scruple, three or four times a day. In this way it generally occasions a sensation of warmth about the stomach, and afterwards in the remoter parts; promotes perspiration, and frequently produces plentiful sweats. The root answers well as a cataplasm for the feet, in deliriums, as garlic does. The London Pharmacopœia of 1788 orders a conserve, in the proportion of half-a-pound of the fresh root to a pound-and-half of double-refined sugar, beat together in a mortar. The dose is a drachm for adults, and it is a good form for the exhibition of the medicine." But the difficulty of administering the Arum in a uniform manner, prevents it from being often used.

Dose.—The fresh root may be given in doses of fifteen or twenty grains three times a-day.

Asarum europæum.

ASARUM EUROPÆUM.

Common European Asarabacca.

Class XI. DODECANDRIA.—*Order* I. MONOGYNIA.

Nat Ord. SARMENTACEÆ, *Lin.* ARISTOLOCHIÆ, *Juss. De Cand.* &c. ASARINÆ, ASARACEÆ, *Burn.*

GEN. CHAR. *Perianth* single, sepaloid, 3-cleft, superior. *Capsule* coriaceous, 6-celled.

SPEC. CHAR. *Leaves* two on each stem, kidney-shaped, obtuse.

Syn.—Asarum, *Raii. Syn.* 158.; *Ger. Em.* 836. *f.*; *Bauh. Pin.* 197.
Asarum vulgare, *Park. Theatr.* 266.
Asarum, n. 1547, *Hall, Hist.* t. 2. 252.
Asarum europæum, *Lin. Sp. Pl.* 633; *Willd.* v. 2. 838; *Fl. Brit.* 509; *Hook, Fl. Scot.* 146; *Fl. Dan.* t. 633; *Bull. Fr.* t. 69.
FOREIGN.—*Asaret*; *Cabaret*, Fr.; *Asaro la bacchera*, Ital.; *Asaro de Europa*, Span.; *Haselwurtz*, Ger.; *Hasselört*, Swed; *Asaroon*, Arab; *Mansoer*, Dutch; *Wodolai*, Russ.; *Kopytnick*, Pol.;
PROVINCIALLY.—*Common Asarabacca*; *Fole's-foot*; *Hazelwort*; *Wild Nard.*

THIS is the Ἄσαρον of Dioscorides, and other ancient authors. It is a perennial plant, a native of England, and other parts of Europe, but extremely local in this country, being confined chiefly to a few places only, in the northern counties. It was found many years ago, as we learn on the authority of the celebrated Ray, in several woods in Lancashire. It was observed also in considerable abundance by Dr. Batty near Kirby Lonsdale, in Westmoreland, where it is collected by the peasantry for medical use; by Mr. Hutchinson, near Keswick, in Cumberland; by the Rev. Dr. Abbot, in Berkshire, by the side of

the road between Henley and Maidenhead; by our friend, Mr. Fernie, in a wood near Kimbolton, Huntingdonshire; and, according to Professor Hooker, by Miss Liston at West Binny, near Linlithgow, in Scotland. The flowers, which are partly concealed by the herbage, have a singularly lurid aspect, and appear early in May.

The Asarabacca grows wild in moist, shady situations. The root is creeping, fleshy, and fibrous. The stem is very short, seldom exceeding an inch; is simple, round, pubescent, bearing a single flower and a pair of leaves only, which spring almost immediately from the root. The leaves are opposite, kidney-shaped, smooth, dark green, shining, and stand upon long downy footstalks. The flower is solitary, rather large, drooping, of an herbaceous colour externally, and dusky purple within, standing upon a short peduncle at the base of the leafstalks. The calyx, which is adherent to the ovary, supplies the place of a corolla; it is large, bell-shaped, coriaceous, and divided at the mouth into three rather deep, pointed, segments, which are turned inwards. The stamens, placed upon the ovarium, are twelve in number, about half the length of the calyx, and, as in Paris, produced beyond the adnate anthers into a little hook. The style is short, crowned with a stigma divided into six radiated recurved segments. The capsule is coriaceous, six-celled, crowned with the substance of the calyx, and containing many ovate seeds.—Fig. (*a*) represents a perpendicular section of the flower showing the position of the cells, and six of the filaments with their adnate anthers, the perianth being removed; (*b*) the compound pistil.

The generic name *Asarum*, like *Adoxa*, is indicative of want of beauty. It is derived from *a* the privative, and *σειρὰ*, a fillet or garland, "*quonium in coronis non addatur*;" thus intimating its uniform rejection by the ancients from their coronal wreaths. If this etymology, which is probably correct, be accepted, the plant should certainly, as Loudon says, be called Asirum, and not Asarum.

It appears, from Pliny, that the *Asarum* was formerly confounded with the *Baccharis*, (*Inula dysenterica*, Lin.) and

hence, according to some, the English name Asarabacca is a compound of both, but we rather incline to the opinion that this composite word was originally given to the fruit of the plant, *Asarabacca*, i. e. Asari-bacca, q. d. the berry of Asarum.

The roots of Asarabacca are brought to us from Leghorn, and the dried leaves from Dauphiny, Languedoc, and Auvergne.

Qualities.—The leaves and roots, when recent, are nearly inodorous; their taste is acrid, bitter, somewhat aromatic, and nauseous. By keeping the leaves, they lose much of their power: they should be dried without heat. By decoction they are rendered inert, but the watery infusion possesses the sensible qualities of the leaves. The recent root, when distilled, yields a volatile oil, which smells like camphor; but this is not obtained from the dried root.

Medical Properties and Uses.—Both the roots and leaves are emetic, cathartic, and diuretic; and previously to the introduction of ipecacuanha, Asarabacca leaves were often administered in doses of half a drachm, and the root in doses of ten grains, to excite vomiting; but as their operation was sometimes violent, they have fallen into disrepute. The chief use of this plant in present practice is as an errhine, where we wish to increase the secretion of mucus by the nostrils, or to influence the state of the brain. About three grains is the quantity to be used, which produces a copious flow of mucus from the nostrils, whereby painful affections of the head, eyes, and teeth, will be often benefited. The discharge is frequently going on for several days; but if the dose be too strong, hæmorrhage from the nostrils is sometimes produced. Exposure to cold, during its use, must be sedulously guarded against. Errhines (says a popular writer) were remedies formerly in much repute, but they require, more than others, great caution in their use. If we consider the minute circulation of the brain, the thinness of the vascular coat, and the great quantity of blood accumulated in the head, every stimulant remedy specially acting on this part, must be attended with great danger of producing rupture in some part of the minute ramification of vessels, and thus occasioning effusion on the brain. In all full and plethoric

habits, therefore, such applications cannot be too much condemned. Their action is to excite convulsions, or strong efforts of sneezing, which may, by irritation of the nostrils, elicit a discharge from the whole surface of this organ, and by sympathy communicate also its influence to the higher parts beyond the reach of the application. It is only then in cases of temporary obstruction that such remedies can be of use, and their operation can be no more than producing an artificial evacuation for the time. Hence, where a peculiar dryness of this part takes place, and where the state of the constitution does not forbid the application of moderate stimulants, they may be applied at times with considerable benefit. In obstinate ophthalmia, connected with laxity of the organ, the irritation of the nostrils by errhines has sometimes effected a cure. The best preparation for this purpose is the *pulvis asari* compositus of the Edinburgh Pharmacopœia, which consists of the dried leaves of asarabacca three parts, the leaves of marjoram and flowers of lavender, of each one part, reduced to powder. A few grains of this, which was long known under the name of *pulvis cephalicus*, snuffed up the nose, procures a considerable evacuation for a long time, without causing much sneezing or inconvenience to the patient. The nostrum called Collins's *Cephalic Snuff*, seems nothing more than the foreign snuff mixed with the British, and a certain quantity of some aromatic.

Off. Prep.—Pulvis Asari Compositius. *E. D.*

XXIV

ROSMARINUS OFFICINALIS.

Officinal Rosemary.

Class II. DIANDRIA.—*Ord.* I. MONOGYNIA.

Nat. Ord. VERTICILLATÆ, *Lin.* LABIATÆ, *Juss. De Cand.* &c. LABIATIFLORÆ, LABIATÆ, *Bart.* LABIATINÆ, LABIACEÆ, *Burn.*

GEN. CHAR. *Corolla* unequal, ringent, with the upper lip 2-parted. *Filaments* long, curved, simple with a recurved tooth.

SPEC. CHAR. *Leaves* sessile.

Syn.—Rosmarinus coronarius fruticosus, *Raii.* Hist. 515; *Bauh. Hist.* ii. 25.
Libanotis coronaria sive Rosmarinum vulgare. *Park. Theatr.* 74.
Rosmarinus, *Hall. Helv.* n. 250.
Rosmarinus officinalis, *Lin. Sp. Pl.* 33; *Willd.* v. i. 126; *Sibthorp, Fl. Græc.* t. 14.
FOREIGN.—*Rosmarin*, Fr. Dan. and Swed; *Rosmarino*, Ital.; *Romero*, Span.; *Rosmarinho*, Port.; *Rosmarin*, Ger.; *Yong tsao*, Chin.; *Klil*, Arab.

ROSEMARY is a native of the south of Europe; but if planted in a dry soil in a sheltered situation, it survives our ordinary winters; flowering in April and May. When the roots enter the crevices of an old wall, says Mr. Neill, the plant is not injured by the severest frosts. It is an evergreen shrubby plant, rising four or five feet high, much branched, downy, and thickly covered with leaves. The leaves are opposite, sessile, linear, about an inch in length, and one-sixth of an inch broad, dark green, smooth, and shining above, with the margins reflected, and woolly, or whitish underneath. The blossoms, which stand on little opposite leafy branches, on short footstalks, are of a pale blue colour, variegated with purple and white, and exhaling, like the leaves, a strong fragrant odour resembling camphor. The calyx is bell-shaped, and villous; the corolla is ringent,

with the tube longer than the calyx, the upper lip erect and bifid; the lower divided into three segments; the middle larger, concave, and notched. The stamens are two, longer than the corolla, curved, and furnished with a minute lateral tooth. The anthers are oblong, and blue; the style the length of the stamens, arched, and furnished with a pointed stigma. The seeds are four, naked, and situated at the base of the calyx. —Fig (*a*) represents the calyx, &c.; (*b*) a section of the corolla showing the insertion of one of the filaments, with its recurved tooth and anther; (*c*) the pistil and tetrachenium.

The generic name, Rosmarinus, is evidently derived from the Latin, *ros*, dew, and *marinus*, in allusion to its inhabiting the sea-coast. "Those," says a distinguished modern author, "who have observed it mantling the rocks on the Mediterranean, with its grey flowers glittering with dew, cannot but be struck with the elegant propriety of the name."

The leaves of the wild rosemary are larger than those of the cultivated sort: the flowers are also much larger, and of a deeper colour. There are also two distinct varieties of this plant; one with white-striped leaves, called the *Silver Rosemary*; the other with yellow-striped leaves, and hence denominated *Golden Rosemary*. The former variety is very tender.

Rosemary is the Λιβανωτὸς of Dioscorides, and other ancient authors, and is supposed to be referred to by Virgil in the following lines:

> "Nam jejuna quidem clivosi glarea ruris,
> Vix humiles apibus casias roremque ministrat."
>
> GEORG. ii. v. 212.

It was supposed by the ancients that it comforted the brain, and imparted strength to the memory; and these properties are referred to by our old poets: "There's rosemary, that's for remembrance," says the distracted Ophelia, in Shakspeare's play of Hamlet; and Perdita says to Polixines and Camillo,

> ——— ———Reverend Sirs,
> For you there's rosemary and rue; these keep
> Seeming and favour all the winter long;
> Grace and remembrance be to you both.

Rue signifying grace, and *rosemary* remembrance, it being our ancestors' "Forget me not." Its supposed quality of strengthening the memory made it also an emblem of fidelity to lovers: thus in a Sonnet of 1584, we have:

> "Rosemary is for remembrance
> Betweene us daie and night;
> Wishing that I might alwaies have
> You present in my sight."

It was accordingly worn at weddings: and it is probable that the same principle caused it to be used at funerals; for in some parts of England it is still distributed amongst the company, who throw sprigs of it into the grave, and of this our poet was likewise mindful when he wrote,

> —"Dry up your tears,
> And stick your rosemary on this fair corse."
> *Romeo and Juliet*, act iv. scene 4.

Abercrombie, in his *Practical Gardener*, alludes to this practice, but supposes the motive to be "a precaution against contagion." From its smelling like incense, it was termed Λιβανωτος, and *Thuribulum*, or little frankincense, by the ancients; and also *Coronarius*, on account of its being used in garlands.

Qualities and Chemical Properties.—Rosemary has a fragrant smell, and a bitter pungent taste. The leaves and tops are strong, and the flowers ought not to be separated from the calyxes, as the active matter resides principally, if not wholly, in the latter. The leaves and tops distilled with water, yield a thin, light, pale essential oil, of great fragrancy, though not quite so agreeable as the plant itself.* Twenty-four pounds of

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* "Distilled oils are frequently called *volatile*, *essential*, or *ætherial* oils. Their chemical characters are nearly the same, from whatever vegetables they are procured, but in their essential qualities they vary considerably, possessing different colours, consistence, smell, and taste. The two latter properties are, of course, derived from that of the plant from which they are obtained; their colours, like those of the fluid fixed oils, are various shades of yellow, green, and brown; they are generally fluid; but some of them, as especially oil of aniseed, congeal by a very moderate reduction of temperature. They are very sparingly soluble in water, but sufficiently so to impart their smell and flavour to it. They are very easily dissolved by spirit of wine, and they boil at different temperatures. Their volatility is much increased by the presence of water, with the vapour of which they rise in distillation at a temperature considerably below their boiling point. They are extremely combustible, much more so than the expressed oils. Most of them are lighter than water, but some sink in that fluid; among the former are the oils of lavender, rosemary, and mint; and of the latter, the oils of cassia, cinnamon, and

the plant yield one ounce of fluid oil, which, when kept, deposits crystals of camphor. Its specific gravity is 0,9057, *Haüy*. Rectified spirit, likewise, distilled from rosemary leaves becomes considerably impregnated with their fragrance; and the active matter of the flowers is somewhat more volatile than that of the leaves, the greatest part of it rising with the spirit.

Medical Properties and Uses.—Rosemary was formerly highly esteemed for its virtues in nervous headache, hysterical complaints, and uterine obstructions; and although it is very commonly used by the vulgar for its emmenagogue virtues, we worship not at the shrine of popular prejudice, and depend upon medicines much more worthy of regard.

A weak infusion of fresh rosemary leaves furnishes to some palates a pleasant substitute for tea, and is particularly agreeable to many dyspeptic stomachs. On account of its odour, it is sometimes added to sternutatory powders; and the spirit of rosemary is used as a cosmetic and anti-nervous cordial, under the name of Hungary water; which enters largely into the composition of the compound spirit of lavender, and the compound soap liniment. The essential oil is stimulant, in doses of two, to five or six drops; but it is very rarely employed internally. The dose, in substance, is from a scruple to half a drachm.

A most pernicious nostrum, sold under the name of "*Balsam of Rakasiri*," consists merely of highly rectified spirits of wine, flavoured with oil of rosemary, and is recommended by its proprietors, as a remedy for consumption! Henry's Aromatic vinegar is said to be an acetic solution of camphor and of the oils of cloves, lavender, and rosemary.

Off. Prep.—Oleum Rosmarini, *L. E. D.*

Spiritus Rosmarini, *L. E. D.*

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cloves, are examples. They are easily decomposed by sulphuric and by nitric acid, and when suddenly mixed with the latter, some of them inflame.

"Like the expressed oils, they are composed of different proportions of oxygen, hydrogen, and carbon.

"The volatile oils are capable of dissolving the fixed oils, and hence the latter are sometimes employed in adulterating them. This fraud may be easily detected by dropping some of the suspected oil on paper; if there be any fixed oil mixed with it, it will remain on the paper after exposure to a moderate heat. Where a cheaper volatile oil has been employed to adulterate a more costly one, the detection can scarcely be made by any other means than by the difference of odour. If spirit of wine be mixed with the oil, when it is dropped upon water, a milky fluid is formed, instead of there remaining a transparent film of oil on the surface of the water."

XXV

RHEUM PALMATUM.

Palmated Rhubarb.

Class IX. ENNEANDRIA.—*Ord.* III. TRIGYNIA.

Nat. Ord. OLERACEÆ, *Lin.* POLYGONEÆ, *Juss. De Cand.* &c. FAGOPYRINÆ, POLYGONEÆ, *Bart.* POLYGONACEÆ, POLYGONEÆ, *Burn.*

GEN. CHAR. *Calyx* 6-cleft, persistent, corolline. *Nut* 1, three-sided, winged. *Seeds* erect, *embryo* inverted, central, straight.

SPEC. CHAR. *Leaves* palmate, many cleft, the laciniæ pointed, roughish; the sinus dilated at the base. *Stalks* obsoletely furrowed above, and round at the edge.

Syn.—Rheum palmatum, *Lin. Sp. Pl.* 531; *Willd.* II. 488.
Rhabarbarum, *Bauh. Hist.* ii. 989; *Lob. Ic.* i. 289.
Rhabarbarum et ponticum genuinum officinarum, *Park. Theatr.* 156.

FOREIGN.—*Rhubarbe*, Fr.; *Rabarbaro, Reobarbaro*, Ital.; *Ruibarbo*, Span. and Port.; *Rhabarber, Aechte Rhabarber*, Ger. and Dutch; *Ta Hioang*, Chin.; *Rhewen*, Russ.; *Rawend*, Ar.

THE palmated rhubarb is a native of Russia, and some parts of Asia, whence the dried root is imported into this country for medicinal purposes. Several species, however, are known to furnish the drug of commerce. These grow chiefly on the declivities of the chain of mountains which stretches from the Chinese town Sini, to the lake Kokonor, near Thibet. The soil here is light and sandy, and the Bucharians assert that the best grows in the shade, on the southern side of the mountains. Linnæus supposed the generic name *rheum*, to be derived from ῥέω, to flow, as expressive of its action on the liver and intestinal canal. The old name *rha*, which is still retained in composition, to designate the species *rha*-ponticum, and *rha*-barbarum, of the latter of which, indeed, the common name *rhubarb* is a corruption, was given to the plant from its being at first

procured only from the banks of the *Rha*, or Volga. Ammianus Marcellinus confirms this opinion, for he says, "The *Rha* is a river, on the border of which grows a root, which bears its name, and is much renowned in medicine. (*Loudon's Encyc.*)

The root of the palmate species is large, thick, oval, branched, brown externally, and of a deep yellow colour within. The stem is erect, round, hollow, jointed, branched at top, and rises to the height of six or eight feet. The lower leaves are very large, palmated, acuminate, somewhat rugged, and stand upon long-channelled smooth petioles, grooved above and rounded at the edge with ferruginous dots; those of the stem are placed close to the stalk, and become gradually smaller towards the summit. The flowers, which appear in May and June, are small, white, numerous, surrounding the stem, and collected at the extremity of the branches, forming a sort of spike. The perianth is divided into six obtuse segments; the filaments are nine, the length of the sepals, and supporting oblong anthers; the style is short, with three reflected stigmas. The ovary becomes a triangular, pointed nut, with membranaceous margins. Fig. (*a*) represents a flower somewhat magnified; (*b*) and (*c*) the fruit; (*d*) a section of the nut; (*e*) a section of the root.

The common Rhubarb (Rheum *Rhaponticum*) was first cultivated by Mr. John Parkinson, in 1629, the seeds of which were sent to him by Dr. Lister, one of the king's physicians. On making trial of the roots, they were found very inferior in power to those of the Rhubarb of commerce. In 1759, Dr. Boerhaave procured the seeds of Rheum *undulatum*, which is a native of China and Siberia. It was cultivated by Mr. Miller, but not very generally received as the true Rhubarb; which induced Boerhaave to procure from a merchant the seeds of the plants which produced the roots that he annually sold, and were admitted at St. Petersburgh to be the genuine medicinal Rhubarb. These seeds were soon propagated, and were discovered to produce two distinct species, namely, the Rheum *undulatum*, referred to above, and the Rheum *palmatum*, which has for some time been supposed to be the true plant, not only by botanists, but by the acknowledged authorities in the Pharmacopœias

of London and Edinburgh; though the Dublin college retain the Rheum *undulatum*. The seeds of Rheum *palmatum* were first introduced into Britain in 1762, by Dr. Mounsey, who sent them from Russia: both Professor Martyn and Dr. Hope cultivated them at the same time, the former at Cambridge, and the latter at Edinburgh. It appears, however, that we are indebted to several species of Rheum for our valuable medicine, as Georgi relates that a Cossack pointed out the Rheum *undulatum* to him as the true Rhubarb; while Prof. Pallas states that in Bukharia, the *palmated* sort seems to be unknown; and that as far as he could collect from description, the species they consider as the true one is the *compactum*, the seeds of which, Mr. Miller informs us, were sent to him from St. Petersburgh, as the true Tartarian Rhubarb. The Chinese Rhubarb, called by the natives Ta Hwangor Hai-houng is cultivated chiefly in the province of Cher-see.

Three varieties of Rhubarb are known in the shops; viz. the Russian, the Turkey, and the East Indian, or Chinese. But although most certainly the whole is not the produce of one species, the trading distinctions are entirely artificial, at least between the two first named, which resemble each other in every respect, being indeed both derived from Tartary. But the portion intended for the Petersburgh market, being selected and sorted at Kiachta, acquires the name of Russian Rhubarb; while the portion that is sent from Tartary to Smyrna, and other places in Turkey, is called Turkey Rhubarb. The best pieces only are sent to St. Petersburgh; and according to the contract with the government, on whose account it is bought, all that is rejected must be burnt; and that which is approved undergoes a second cleaning, before being finally packed up for the capital. (*Ainslie, M'Culloch, &c.*)

For the following remarks on the Rhubarb of commerce, we are indebted to an interesting paper lately published in the Edinburgh Philosophical Journal, by Mr. David Don, Librarian of the Linnean Society. "Mr. Sievers, an enterprising assistant of Professor Pallas, and well known by his interesting Letters on Siberia, published in the *Nordische Beytrage*, was sent by the Empress Catharine II., purposely to try to obtain the true Rhubarb plant from its native country; and although, after travelling for seven years in the countries adjacent to that in which it is found, he was unable to effect the object of his mission, yet he ob-

tained sufficient information to convince him that the plant was then unknown to botanists. But it was reserved for Dr. Wallich, the zealous superintendent of the Calcutta Botanic Garden, to set this long agitated question at rest, by the transmission of seeds and dried specimens of the true Rhubarb plant to Europe. Last spring, Mr. Colebrooke received a quantity of the ripe seeds from Dr. Wallich, and presented a portion of them to Mr. Lambert, who has been so fortunate as to raise a number of plants of this valuable vegetable. The seeds were sown in pots, and, by the aid of artificial heat, soon vegetated. The young seedlings were transplanted into several pots filled with rich earth, and the pots were gradually changed as the plants increased in size. By this treatment, as might well be imagined, the young plants grew vigorously, and, at the end of autumn, the leaves were from fifteen inches to a foot in breadth, and the footstalks nine inches long, with half an inch in diameter. The plant, on examination, proved to be identical with my Rheum *australe*,* from Gosaingsthan, in the Himalaya Alps. I find Dr. Wallich calls it Rheum *Emodi*, a name which I should certainly have adopted, had I been aware of it before the publication of my work. The whole plant is thickly beset with numerous small, bristle-shaped, cartilaginous points, which give it a rough feel. The leaves are of a dull green, and the footstalks are red, and deeply furrowed. The native samples I have seen appear to be smaller in all their parts, and the leaves, although flowering specimens, frequently not more than three or four inches broad; the footstalks four inches long, and slender, and the flowering stem not above two feet high. It is curious to observe how well this description accords with what Sievers has given us. The Rheum *australe* appears to be peculiar to the great table lands of central Asia, between the latitudes of 31° and 40°, where it is found to flourish at an elevation of 11,000 feet above the level of the sea; and there is little doubt, therefore, of its proving perfectly hardy in our own country. Large quantities of the roots are annually collected for exportation in the Chinese provinces within the lofty range of the Himalaya. The best is that which comes by way of Russia, as greater care is taken in the selection; and on its arrival at Kiachta, within the Russian frontiers, the roots are all carefully examined, and the damaged pieces destroyed. This is the fine rhubarb of the shops, called improperly Turkey Rhubarb. We have yet to regret the want of much interesting information respecting the mode of collecting and preparing the roots, and other details interesting in a commercial point of view. The unfortunate fate of Mr. Moorcroft, whose zeal and multifarious knowledge well fitted him for a scientific traveller, has deprived us of much valuable information on this as well as on many other subjects."

According to Dr. M'Culloch, the total quantity of rhubarb imported in 1829 into this country, amounted to 146,881 lbs.; of which, 10,659 lbs. came from Russia, 127,443 lbs. from the East Indies, and 8,074 lbs. from the Cape of Good Hope. Of

* *R. australe*, foliis subrotundo-cordatis obtusis planis subtus margineque scabris sinu baseos dilatatis, petiolis sulcatis teretiusculis cum ramis peduncunlisque papilloso-scabris, perianthii foliolis ovali-oblongis apice crenulatis.—*Don. Prod. Fl. Nepal*, p. 75.

the gross quantity imported, 33,673 lbs. were retained for home consumption. The price of rhubarb in bond varies from 2*s.* per lb. for the inferior East Indian, to 9*s.* for the best Russian.

CULTURE.—Since the introduction of Rheum *palmatum*, it has been largely cultivated in this country; and we are informed by the best authority, that the London market is principally supplied from Banbury. Fine specimens are worth about six shillings per pound, and resemble Turkey rhubarb in their appearance more than they do East Indian; although it is for the latter that they are principally substituted. The article sold at the herb shops under the designation, "English Rhubarb," is the produce of the R. *undulatum;* the leaf-stalks of which are used for tarts. It may be bought for nine-pence per pound, and from its want of power has caused undeserved reproach to be cast on the proper cultivated sort.

Twenty pounds of English Rhubarb,
Seven pounds of East India,
Three pounds of Turkey,

ground together, are the proportions employed by one of the most fashionable druggists at the west end of the town, to form a fine looking article, denominated, and sold as, "Fine Turkey Rhubarb." Indeed, so strong is prejudice, that we have it from very good authority, that perfectly unadulterated Turkey Rhubarb, procured from Apothecaries Hall, has been rejected as bad, when attempted to be vended in a retail shop.

The Society for the Encouragement of Arts, Manufactures, and Commerce, exerted itself for many years to promote the culture of Rhubarb in this country; and medals and other rewards were voted to Sir A. Dick, Mr. Jarman, Mr. R. Davis, Jun. of Minchead, Mr. Ball, of Williton, Mr. Jones, late of Fish Street Hill, &c.

Mr. Davis recommends the seeds to be sown in a very gentle hot-bed, in March, and when the roots are about the size of a crow's quill, they should be drawn up carefully to preserve the taproot, and planted in a fine rich earth in a deep soil: if the weather should prove dry, they must be watered. When the plants are once in a growing state, all farther care and trouble are at an end, but that of keeping them free from weeds. The distance of the plants should be eight feet; and *as they disappear above seven months in the year*, the ground may be usefully

employed in many articles of gardening, from the middle of August to the beginning of April.

The seeds, however, do not require a hot-bed to make them vegetate; but if sown in the natural ground during the spring, when the weather is open, soon come up and thrive fast. The plant delights most in a rich, light, deep soil, and warm exposure, but will thrive almost in any situation.

Mr. Jones recommends the seeds to be sown in March and April, or "during the autumn, in August and September; the former to be transplanted in autumn, the latter in spring. Instead of placing the seedling plants where they are to remain, as usually recommended, beds should be prepared resembling those which are made for asparagus, of fine mould, from twelve to eighteen inches deep. When the young plants are four or five inches high, and have thrown out as many leaves, transplant them upon those beds at eight inches asunder; selecting, first, the largest, carefully drawing them out, so as not to destroy or even disturb the fibres more than is unavoidable. Watering the beds previously to their removal will greatly facilitate the operation.

"In the culture of rhubarb, the whole difficulty consists in bringing the plants through their first season; if the weather be hot and sultry, they must be shaded, and at all events must be continually watered. For transplanting, a wet or cloudy day should be preferred; and if the weather should continue for two or three days successively, not more than four or five in a hundred will probably be lost. In a month the roots will have made fresh shoots, and new leaves will have succeeded the former, which commonly, notwithstanding all our care, will wither away. The plants may now remain till the ensuing spring, or if the summer be favourable, and the land intended for the plantation be well trenched three feet deep, it may be completed without delay. It is a good way to sow the ground with carrots; the surface by this means being preserved from weeds, and rendered finer by repeated hoeings, and the bottom kept light and open. At different periods during the summer, when the plants are of a proper size, and the weather is cloudy or showery, with a transplanter or circular spade, remove them with a ball of earth adhering, at the prescribed distances, into the midst of the carrots, destroying such as might obstruct the growth of the rhubarb; and if the weather should prove unusually hot, the foliage of the carrots will preserve the young plants from the sun till they have acquired a sufficient growth; after this it remains only to keep the plantation clear, and the trenches open."*

"In the choice of situation the aspect is not very material, provided it be not shaded too much on the south or west. The indispensable points are the depth and quality of the soil, which should be light, loamy, and rich, but not too much so, lest the roots should be too fibrous: it can scarcely be too dry, for more evil is to be expected from a superabundancy of moisture, than from any actual want of it. A declivity is very eligible for the plantation. When a plantation does not possess this natural advantage, narrow beds and deepened trenches are among the artificial means that should be adopted; but most situations will require some care to prevent the ill effects of water remaining on the

* *Trans. of the Society of Arts.* 15. 167.

crowns of the plants: therefore, when the seed-stalks are cut off, which ought always to be done on the withering of the radical leaves, they should be covered with mould in the form of a hillock. This will answer two good purposes, that of throwing off the rain, and keeping open the trenches, by taking the earth from them."

If the roots be covered with litter, or the earth be drawn over them in winter, they will rise stronger the following spring; and some recommend the seeds to be sown where the plants are to remain, and when they appear, the ground should be kept free from weeds. When thinned out, the distance of the plants should be eight feet.

Sir William Fordyce, who sowed the seeds at first upon a hot-bed, subsequently found that, on the whole, they succeeded best when sown in the open ground, in an east or south-east exposure, during the last half of March, or in April, or even so late as the end of May, if the spring proved cold or dry. The plants may then be transplanted during the whole course of the summer.

If the ground be stirred about a seeding plant, the seeds falling will produce plenty of young plants, both in the autumn and the following spring; these may be transplanted about midsummer. They blossom the third year, and till then the medicinal qualities of the roots scarcely come into existence.

The Chinese get up their rhubarb in winter. Pallas says that the Tartars take up theirs in April and May; but in Bell's account, this is said to be done in autumn. Forster, in his History of Voyages in the North, affirms, that the roots are dug up in winter, because they then contain the entire juice and virtue of the plant; those that are taken up in summer, being of a light spongy texture, and unfit for use. We should think, that in this country, February would be the month most fit for digging up the roots. The greatest difficulty appears to be in drying, and preserving them.

In Tartary, being thoroughly cleaned, and the smaller branches cut off, they are cut transversely into pieces of a moderate size; these are placed on long tables or boards, and turned three or four times a day, that the yellow viscid juice may incorporate with the substance of the root. If this juice

be suffered to run out, the roots become light and unserviceable: and if they be not cut within five or six days after they are dug up, they become soft, and decay rapidly. Four or five days after they are cut, holes are made through them, and they are hung up to dry, exposed to the air and wind, but sheltered from the sun. Thus, in about two months, the roots are completely dried. The loss of weight is very considerable: seven loads of green roots yielding only one small horse-load of perfectly dry rhubarb.

The Chinese method is somewhat different. They skin the roots, cut them into slices, and dry them on stone slabs, under which large fires are kindled: but, as this process is not sufficient to dry them perfectly, they make a hole through them and suspend them on strings; some say exposed to the sun, while Kochin asserts that they are hung in the shade. Were we to cultivate rhubarb in this country, we should take the same preliminary steps that are practised by the Tartars, and afterwards dry the pieces in a malt-kiln, where they might be hung on strings without interfering with the barley.

From experiments made at the Bath hospital, it appears that the purgative qualities of English are scarcely so strong as Turkey or East India rhubarb, but the difference is not great. And from numerous trials made by Dr. Parry, it appears that one of the specimens of English rhubarb was fully equal in its effects to the Turkey.

Upon the whole, if English rhubarb should be allowed to be inferior to the foreign, which is perhaps doubtful, it appears probable, that this inferiority is owing only to such circumstances as attention and industry may obviate; and that this might be done in a great measure by attending to the age of the plant when taken up, to the root being cut transversely, rasped on the outside, having the sappy parts cut out, and being quickly dried. The best specimens of the drug have generally been allowed to grow six or seven years; the roots are then very large, weighing from thirty to fifty pounds.

When it is considered that the duty on East Indian rhubarb is 2*s.* 6*d.* per pound, and that about £200,000 is paid annually for

what is imported into this country, the subject is one of considerable importance, and arrested the attention of the late Mr. Salisbury of the Fulham Road; whose zeal for the improvement of domestic economy, particularly as applicable to Ireland, is well known to the philanthropic part of the community. He has favoured us with a sample of the root cultivated by himself, and to him we are likewise indebted for the following remarks:

"Rhubarb grows well in light loamy soils: it blooms at the age of three years, and ripens abundance of seeds by which the plants are raised. The propagation requiring particular care and attention, should be considered more the work of a nurseryman than that of the farmer; and if a sale were found for a quantity, they could be raised fit for planting out at five shillings per hundred.

"The land intended for this crop should be trenched as deep as it will bear, without throwing up a bad under soil, and the plants set at exact squares three feet apart; so that 4,840 will just plant an English acre. During the summer season the land must be frequently hoed; and at the autumn or winter it should be every season dug, and particular care paid to throw the mould up to the roots. By observing this plan during the winter, and raking it off in spring, the growth will be much encouraged. Unless it is necessary for the purpose of saving seeds, none of the plants should be allowed to throw up blooming stems, which on their appearance should be cut down: otherwise the plants are weakened at the root.

"The crop must stand seven years on the land, and, in fact, experience proves that the roots will keep increasing in size till a much older period, so that it might be taken up after that period, at such time as best suited the market, or the proprietor's pleasure.

"The quantity in weight of the roots, at the end of seven years, will consequently vary according to circumstances; but from an experiment made this present autumn, the writer is warranted in the supposition that from one acre *five thousand pounds weight* may *at least* be expected of *prime rhubarb*, besides a quantity that would find sale for inferior purposes to the druggists—as *extract*, *tincture*, &c.

"The labour attending this crop, from the distance the plants are apart, is very trifling, and would require less expense than in crops where the plants stood thicker, as in *madder*, &c., where the *hoeing* and *weeding* is more tedious. The expense would be, in Ireland, as follows:

First Year.	£.	s.	d.
Rent of one acre, or 160 perches	2	0	0
Five thousand plants, at 50*s.*	12	10	0
Trenching, at 6*d.* per rod	3	6	8
Planting	1	0	0
Hoeing, three times, at 7*s.* per acre each time	1	1	0
	£19	17	8

Second Year.

	£.	s.	d.			
Rent	2	0	0			
Digging among the plants, at 2*d.* per rod . .	1	6	8			
Hoeing, three times . .	1	1	0	4	7	8
Ditto for five following years . . .				21	18	4
				£46	3	8
Trenching land to take up the crop, at 1*s.* per perch				8	0	0
Preparing and drying the crop, at 2*d.* per lb., 5,000 lbs.				20	16	8
Tythe, seven years, at 8*s.*				2	16	0
			Total	£77	16	4

Supposing that no higher price could be obtained for this *prime* Rhubarb than the inferior English root now fetches, viz. 9*d.* per lb., and not calculating the second quality, the 5,000 lbs. would fetch £187 10*s.*, from which, deducting the outlay, a balance remains in favour of the grower of £117 10*s.* But it should be remembered, that good English Rhubarb has sold at 6*s.* per lb.

We have been almost wholly indebted for our materials on the cultivation of rhubarb, to an able article in Miller's Gardener's Dictionary, which was written by the late Professor Martyn; and those who are desirous to glean more information, may consult that work with pleasure and advantage.

Qualities and Chemical Properties.—The best rhubarb, termed Turkey, or Russian, is in small pieces, with a hole in the middle, made in the recent root for the purpose of drying it. The colour is a lively yellow, streaked white and red. Its texture is dense, and its powder a bright yellow. In selecting rhubarb, the pieces should be broken, and those which are of a bad colour, or exhibit appearances of decay, should be rejected. The smell of rhubarb is somewhat aromatic, and it has a nauseous, bitter, slightly astringent taste.

"Another kind, imported from China, is known by the name of East Indian rhubarb; it is in larger masses, more compact and hard, heavier, less friable, and less fine in the grain than the other, and having less of an aromatic flavour."* It is said by Dr. Kelman, to be the produce of the same plant, but that it

* Murray's Materia

is prepared with less care. Water digested upon rhubarb dissolves about 50 per cent. The infusion is yellow-brown, and contains mucilaginous, extractive, and astringent matter. Alcoholic tincture of rhubarb has a deep yellow colour, and a remarkably penetrating nauseous taste and odour. It is generally stated, that rhubarb contains oxalate of lime, but Mr. Brande has never succeeded in obtaining oxalic acid from it, though he has procured an uncrystallizable acid, having the characters of the malic acid.* The following substances were obtained from 100 parts of the finest Turkey rhubarb:—

Water	8 . 2
Gum	31 . 0
Resin	10 . 0
Extract, tan, and Gallic acid	26 . 0
Phosphate of lime	2 . 0
Malate of lime	6 . 5
Woody fibre	16 . 3
	100 . 0

Pfaff has named the principle in which the purgative property of rhubarb resides, *rhubarbarin*; while M. Nani, of Milan, regards the active principle of this drug as a vegetable alkali; but, according to the editor of the Journal of Science, he has not given any proof of its alkaline nature. M. Vaudin, by gently heating rhubarb in powder with eight times its weight of nitric acid, of the specific gravity of 1·375, evaporating to the consistence of a syrup and diluting with cold water, obtained a substance which he has called *rhein*. The rhein, which by the above process is deposited, is an inodorous substance, having a slightly bitter taste, and an orange colour. It is sparingly soluble in cold water; but dissolves in alcohol, ether, and hot water, and its solutions are rendered pale yellow by acids, and rose-red by alkalies. It may be extracted from rhubarb by ether, a fact which proves that it exists ready formed in the plant; and its mode of preparation shews that it possesses unusual permanence, powerfully resisting the action of nitric acid.—*Turner*.

Medical Properties and Uses.—The medicinal proper-

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ties of this valuable root are so well known, that it appears almost a work of supererogation to mention them. It is in common use as a stomachic or cathartic, according to the dose in which it is administered. As a cathartic, from one scruple to half a drachm is required for a dose: but a few grains are sufficient to excite the action of the stomach and intestines, and are often employed, when it is desirable that the food should be assisted to pass quickly from the former, or when we merely wish to increase the natural action of the latter. In these small doses, it will be found useful in hypochrondriasis, jaundice, and dyspepsia; as it obviates costiveness, and by its bitter principle has a tendency to restore the tone of the digestive organs. By some it is considered to have an astringent effect, after its operation as a purgative has ceased: it is therefore recommended to be exhibited in diarrhœa; and is especially adapted for the bowel diseases of infants. It may be advantageously combined with sulphate of potash as a purgative for children, or with any other of the neutral salts; and to cover its nauseous flavour, it is usual to prescribe with it a few grains of powdered cinnamon, or some aromatic water. It is also an excellent adjunct to neutral salts and calomel, rendering their operation more mild. Combined with the extract of chamomile, or gentian, a useful tonic pill is formed, to which may be added preparations of soda, when antacids are required. The tincture of rhubarb is an excellent stomachic, given with some bitter infusion; but the vulgar practice of taking it for pains in the bowels, too often increases inflammation when it exists. Rhubarb speedily passes off by the kidneys, it tinges the urine saffron-yellow, and may frequently be detected in that fluid, ten minutes after administration, by the aid of an alkali. Sir Everard Home has advised the powder to be applied to ulcers, which require a slight stimulus, but the practice is seldom adopted. The footstalks of the Rheum *rhaponticum* and *undulatum* are used for culinary purposes; and Dr. Anthony Todd Thomson has recommended the palmated species.* We had, however, ourselves many years previously used the petioles of both species, which

were cultivated in our garden at Laleham, and found that if grown in a damp shady soil, they were both equally palatable. But we are bound to state, that a friend of ours, whose palate is in good order, and whose botanical knowledge is very great, adopted the same plan without becoming a convert to its propriety. He declares that the astringency was so powerful, that neither he nor his family could eat it; which, if a calculation be not made of differences produced by the effects of soil, only, proves the truth of the old adage: "De gustibus non est disputandum."

Off. Prep.—Infusum Rhei, *L. E.*
Vinum Rhei, *E.*
Tinctura Rhei, *L. E. D.*
Tinctura Rhei composita, *L.*
Tinctura Rhei et Aloes, *E.*
Tinctura Rhei et Gentianæ, *E.*
Pilulæ Rhei compositæ, *E.*

The following Table, by Dr. Anthony Todd Thomson, shows the effects of re-agents on the aqueous infusions of the two varieties of rhubarb; and this gentleman thinks, with M. de Lassaignes, that the acid contained in rhubarb, and termed *rheumic* by Mr. John Henderson, is the oxalic.

Table I. Precipitates formed by Acids, Alkalies, and Neutral Salts.

Variety of Rhubarb.	Sulphuric Acid.	Nitric Acid.	Muriatic Acid.	Oxymuriatic Acid.	Solution of Potass.	Solution of Subcarbonate of Potass.	Lime water.	Muriate of Barytes.	Silicated Potass.
Russian.	copious, greenish yellow.	scanty, flocculent, pale yellow.	scanty, very slowly formed, yellow.	slowly formed, pale olive.	none, but strikes a deep lake colour.	none, but strikes reddish brown.	scanty, slowly formed, brown.	scanty, olive green.	none, but strikes a deep brown.
Chinese.	more copious, brownish yellow.	less scanty, pale yellow.	scanty, quickly formed, brownish yellow.	slowly formed, orange yellow.	none, a deeper lake.	none, but renders it turbid, and deep reddish brown.	copious, quickly formed, brown.	less scanty, orange yellow.	none, but strikes a deep brown.

Table II. Precipitates formed by Solutions of Metallic Salts.

Variety of Rhubarb.	Solution of Oxysulphate of Iron.	Solution of Nitrate of Silver.	Solution of Nitrate of Mercury.	Solution of Nitrate of Lead.	Solution of Muriate of Mercury.	Solution of Acetate of Lead.	Solution of Tartarized Antimony.
Russian.	copious, nearly black.	scanty, pale greenish yellow.	copious, olive yellow.	scanty, slowly formed, yellow.	scanty, slowly formed, pale olive.	scanty, greenish yellow.	scanty, slowly formed, whitish.
Chinese.	copious, deep olive-green.	copious, orange yellow.	copious, heavy, bright yellow.	scanty, slowly formed, deeper yellow.	copious, quickly formed, heavy yellow.	copious, yellow.	scanty, still more slowly formed.

Tormentilla erecta.

XXVI

TORMENTILLA ERECTA.

Common Tormentil.

ss XII. ICOSANDRIA.— *Ord.* V. POLYGYNIA.

Nat. Ord. SENTICOSÆ, *Lin.* ROSACEÆ, *Juss.* ROSACEÆ, DRYADEÆ, *De Cand. Vent. Burn. &c.*

GEN. CHAR. *Calyx* 8-cleft, with the segments alternately smaller. *Achenia* minute, and affixed to a small juiceless receptacle; depressed and hairy.

SPEC. CHAR. *Stem* ascending, dichotomous. *Leaves* ternate, all sessile. *Leaflets* serrate. *Stipules* cut.

Syn.—Tormentilla, *Raii. Syn.* 257.; *Ger. Em.* 992. *f.*; *Camer. Epit.* 685. *f.*
Fragraria, *n.* 1117; *Hall. Hist. v.* 2. 47.
Tormentilla erecta, *Lin. Sp. Pl.* 716; *Willd. v.* 2. 1112; *Woodv. t.* 9.
Tormentilla officinalis, *Fl. Brit.* 552; *With.* 476; *Hook Fl. Scot.* 164.
Potentilla Tormentilla, *Sibth.* 162; *Grev. Fl. Scot.* p. 116.
FOREIGN—*Tormentil*, Fr.; *Tormentilla*, Ital. Span. Port.; *Tormentilwurzel*, Ger.; *Sabiasnoi koren*, Russ.

OF this genus there are but three known species, two of which are British: Tormentilla *erecta*, and T. *reptans*. The former, which is the subject of the present article, is distinguished by its smaller flowers, its sessile leaves, and its more or less erect stem. Both are common plants, particularly the present species, growing on dry barren pastures, and by road-sides, throughout Europe; flowering in June and July.

Common Tormentil has a large perennial, woody, irregular, knotty, and generally crooked root, dark-brown externally, and reddish within. It sends forth several stems, which as the trivial name imports, are erect, especially in the north of Europe, as in Sweden, here they are very frequently procumbent, or spreading, whence the synonyme *officinalis* is by some preferred. The stems are round, slender, wiry, and branched towards the top, and seldom exceed a foot in length. The leaves are mostly sessile, and composed of three oblong, acute, deeply serrated leaflets, slightly hairy and paler underneath, but dark-green above, and accompanied by small, deeply cut stipules. The flowers are small, solitary, of a golden-yellow colour, and stand upon long slender axillary, or terminal stalks; each flower consisting of four obcordate petals, attached by short claws to the rim of the calyx. The

calyx is hairy, and cut into eight or ten ovate, unequal segments, the outer of which are alternate, smallest, and accessory. The filaments are about sixteen, awl-shaped, not half so long as the corolla, and have roundish erect anthers. The styles are lateral and deciduous. The ovaries are very small, usually eight, supporting single short thread-shaped styles, with obtuse stigmas. The akenia are ovate, obscurely wrinkled, and smooth, and seated on a small depressed hairy receptacle.—Fig. (*a*) represents the calyx; (*b*) the stamens; (*c*) the pistils.

Much difference of opinion exists as to the propriety of separating these plants, viz. the species *erecta*, *reptans*, and *humifusa*, from the genus *Potentilla*, and forming them into the genus *Tormentilla*. Sibthorpe, who is followed by De Candolle, Lindley, &c. reunite the whole, and call the officinal species, *Potentilla Tormentilla*. Was the most obvious difference the only distinction, viz. the number of the petals, this would doubtless be correct, for *Tormentilla* occasionally varies the number. The editor has found on the same plant, some flowers with *Tetra-*, and others with penta-petalous corollæ. But when the dry elevated receptacles of the *Potentillæ*, are contrasted with the depressed hairy ones of the *Tormentillæ*, it seems most advisable to keep the genera distinct.

The generic name *Tormentilla*, a diminutive of *tormentum*, a pain or griping, is supposed to be expressive of its use in alleviating pains in the teeth, or the bowels, especially dystentery (*tormina*.)

Qualities and Chemical Properties.—The root of Tormentil possesses a slightly aromatic odour, and a strong astringent taste. "To boiling water it yields its active matter, which appears to be tannin, as the infusion is copiously precipitated by solution of isinglass. Excepting galls and catechu, it contains more tannin than any other vegetable."

Medical Properties and Uses.—Tormentil root was formerly used in the plague and other malignant diseases, and was recommended by Vesalius as no less effectual than guiacum for syphilis. It is now merely used as an astringent; but because it is indigenous, and to be found on almost every heath, it is seldom prescribed. We believe it, however, to be one of the best medicines of its class; and, as it produces its astringent effects without increasing excitement, Dr. A. T. Thomson recommends it to be given in those diarrhœas which attend pulmonary consumption. It forms an excellent application in the form of gargle, for spongy gums and ulcerations of the mouth or tongue, and has been recommended as an external application to ill-conditioned sores. In the Orkneys the roots are used in the tanning of leather; and, in the islands of Tiree and Coll, a decoction of them in milk is employed by the inhabitants as a domestic remedy in diarrhœa and dysentery.

Tormentil root may be given either in the form of decoction or of powder; but as it enters into the composition of the *pulvis cretæ compositus* of the London pharmacopœia, that preparation is generally prescribed by those who are conversant with its virtues.

Dose.—In substance, from half a drachm to one drachm.

IRIS FLORENTINA.

Florentine Iris.

Class III. TRIANDRIA.—*Ord.* I. MONOGYNIA.

Nat. Ord. ENSATÆ, *Lin.* IRIDES, *Juss.* IRIDEÆ, *De Cand.* IRIDACEÆ, *Burn.*

GEN. CHAR. *Perianth* 6-parted, petaloid; the alternate segments larger and reflected. *Stigmas* petal-like.

SPEC. CHAR. *Perianth* bearded. *Leaves* sword-shaped, smooth, shorter than the sub-biflorous scape.

Syn.—Iris flore albo, *Raii Hist.* 1180; *Bauh. Hist.* ii. 719.
Iris alba florentina, *Ger. Em.* 52; *Park.* 180. t. 183. *f.* 2.
Iris florentina, *Lin. Sp. Pl.* 55; *Wild. v.* 1. 224; *Sibth. Fl. Græc.* 28. t. 39.
FOREIGN.—*Iris de Florence*, Fr.; *Ireos*, Ital.; *Iris*, Sp.; *Violenwurtel*, Ger.

THIS species of Iris is a perennial plant, a native of Carniola, and some parts of the south of Europe; but it is common in our gardens, and was cultivated by Gerarde, towards the end of the sixteenth century. The flowers are very handsome, and appear early in May.

The Florentine Iris has a thick tuberous creeping stem, usually called its root; externally it is brown, yellowish white within, and sends out numerous fibres, which are the true roots, from the under part; when these are pared off, the stem appears full of round spots. The leaves are radical, sword-shaped, sheathing, of a glaucous green colour, pointed, and somewhat curved inwards at the apex. The stems are erect, simple, cylindrical, about two feet high, and bearing each two or three flowers. The flowers, which terminate the stalks, are large, white, erect, and spring from a ventricose sheath, or calyx, of two leafy valves. The perianth is divided into six segments, the three outer ones being the largest, reflexed and spreading; they are thick and fleshy near the base, and bearded within, with white hairs, yel-

low at the tip; the border is rounded, emarginate, and an inch wide, white and striated near the flexure; the inner erect segments are narrow, bluish white, bent inwards, and have thick greenish claws. The stamens are three, lying on the larger petals, and crowned with long pale yellow anthers; the germen is oblong, obtusely triangular, and placed below the corolla; the style is compound, short, and thread-shaped, and separates into three equal dilated segments, of the texture of petals, which arch over the stamens. These are the stigmata. The capsule is three-celled, and contains many flat brown seeds. Fig (*a*) represents a front, and (*b*) the posterior view of a stamen; (*c*) the pistil.

Qualities.—The recent root is acrid, and excites, when chewed, a pungent heat in the mouth, which continues several hours; but on being dried, this acrimony is lost, and the taste becomes somewhat bitter. That which grows in England has but little odour; but the foreign roots, which are brought from Italy, possess a most agreeable fragrance, resembling violets.

Medical Properties and Uses.—Several species of Iris, amongst which is the I. *florentina*, possess hydragogue purgative properties, and the expressed juice of the latter, in drachm doses, was formerly administered for the cure of dropsy. In its dried state, it also entered into the composition of the *Trochisci Amyli*, in consequence of expectorant virtues being attributed to it; and on the Continent it is still used as an errhine, combined with other substances. Orris powder is frequently used by females and others, in large quantities, as a perfume, and serious consequences are said to have been produced by this practice. Dr. Aumont, in a paper lately read to the Royal Academy of Sciences in France, relates a case in which two young girls became paralytic and insensible, from having put a considerable quantity of Orris root into their hair on going to bed. When they awoke in the morning, they were seized with violent headach and giddiness, with pain and heat in the throat, similar to what is produced by cantharides, and the younger of the two was completely paralytic on the right side for more than five hours.

With us, it is now merely employed to cover odours in the mouth, or to form a pleasant basis for tooth-powder. As a dentrifice it is commonly conjoined with burnt hartshorn, charcoal, Armenian bole, dragon's blood, and other substances, as in the following formula —

℞. Pulv. Cornu Cervi usti ℥j.
Pulv. Rad. Iridis Florent. ʒij.
Pulv. Gummi resinæ Sanguis Draconis dicti ʒj.
Olei Rosæ gtt. ij. Misce fiat pulvis quo dentes fricantur.

ACONITUM NAPELLUS.

Common Monk's-hood, or Wolf's-bane.

Class XIII. POLYANDRIA.—*Order* III. TRIGYNIA.

Nat. Ord. MULTISILIQUÆ, *Lin.* RANUNCULACEÆ, *Juss.* RANUNCULACEÆ, HELLEBOREÆ, *De Cand. Burn.* &c.

GEN. CHAR. *Calyx* pentasepalous, petaloid, the upper sepal arched and helmet-spaped; *Petals* or *Nectaries* 2, peduncled, recurved.

SPEC. CHAR. Upper *sepal* arched posteriorly, *spur* of the nectary nearly conical and bent down, divisions of the leaves cuneate, pinnatifid, and scored with a line; *ovaries* 3-5.

Syn.—Aconitum cœruleum seu Napellus, *Bauh. Pin.*
Aconitum Napellus, *Lin. Sp. Pl.* 751; *Willd.* 183.
Aconitum caule simplici, *n.* 1197. *Hall Hist.* ii. 1235.
Aconitum vulgare, *De Candolla. Prod.*
FOREIGN.—*Aconit, Chaperon Moine,* Fr.; *Napello,* Ital.; *Aconito,* Span.; *Blauer-stramhut,* Ger.

THIS species of Aconite, (which has frequently been mistaken for the A. *neomontanum*, so strongly recommended by Baron Stöerck,) is one of our most active vegetable poisons, and is still retained in the London and Edinburgh Pharmacopœias. It is very generally cultivated in gardens as an ornamental plant; but grows spontaneously in the alpine forests of Sweden, France, Switzerland, Austria, Carniola, and other parts of Europe. It is a doubtful native with us, but Smith found it abundant on the banks of a brook running into the river Teme, in Herefordshire, and also by the side of the larger stream; he has, therefore admitted it into the English Flora.

The root is simple, or fusiform, and woody. The stem is erect, simple, clothed with leaves, rises to the height of two or three feet, and is terminated by an elegant cylindrical spike of flowers, which are developed in May and June. The leaves are palmated

and divided into five wedge-shaped segments; these are deeply cut and toothed, and stand alternately upon long-channelled footstalks, which become gradually shorter as they approach the top of the stem, so that the upper leaves are nearly sessile; the whole are dark green above, paler underneath, smooth and shining. The flowers, which are of a deep violet colour, proceed alternately from the axis of the spike, and are supported upon short pedicles. Two small bracteæ are placed on the flower-stalk, at a short distance from the flower. The petaloid sepals are five; the uppermost helmet-shaped covering the petals or nectaries; the lateral ones broad, roundish; the lower oblong, and bending downwards. The petals, usually called nectaries, are two, concealed under the upper sepal; each nectary is furnished with a hooked spur, with the lip lanceolate, revolute and bifid. The stamens are filiform, converging, purple at the upper part, and supporting whitish anthers. The germens are from three to five, with simple reflected stigmas. The capsules, which correspond in number with those of the germens, contain numerous angular-wrinkled seeds. Fig. (*a*) represents the upper-arched sepal; (*b b*) the lower sepals; (*c c*) the lateral sepals or alæ; (*d d*) the nectaroid petals; (*e*) the stamens; (*f*) the ovaries.

There are several varieties with white, rose-coloured, and variegated corollas. Those with blue flowers are said to be the most powerful. The variety called *pyramidale* is most commonly cultivated in English gardens, on account of the beautiful appearance of its long spike of flowers, which are sometimes above two feet in length. The Aconitum *Cammarum* is sometimes confounded with the present species, but the flowers are of a paler blue, the helmet larger, and the plant is much taller; frequently attaining the height of six feet.

The etymology of the generic name, *Aconitum*, is involved in considerable obscurity. Some have deduced it from Acone, a city of Bithynia, where it grew in great abundance; according to Prof. Martyn, it is derived from ακονιτος, *pulveris expers*, (without dust,) because the plant grows on rocks destitute of soil; but the most probable derivation is ακονη, a rock or hone, and this is agreeable to the description given of it by Ovid:—

" Quæ quia nascuntur durâ, vivacia, cautè,
Agrestes *Aconita* vocant."—*Metam.* vii. 413.

Pliny says: "Aconitum nascitur in nudis cautibus quas *Aconas* nominent; et ideo Aconitum aliqui dixêre, nullo juxta ne pulvere quidem nutriente. Hanc aliqui rationem nominis attulêre."

Its deleterious effects were well known to the ancients, who regarded it as the most violent of all poisons, being unacquainted with those of mineral origin, and fabled it to be the invention of Hecate, who caused it to spring from the foam of Cerberus. Aconite is said to have been the principal ingredient in the poisonous cup that was mingled by Medea for Theseus; and it was the poison employed to execute the barbarous law in the island of Ceos, which condemned to death all who were no longer useful to the state. Hence the old men who were too feeble to defend themselves, were deemed useless, and presented with a draught of the juice of Aconite.

Qualities and Chemical Properties.—Although the root is the most powerful, every part of the plant is poisonous, for on chewing a small quantity of the leaves, a sensation of numbness will be felt in the lips and tongue, which continues for some hours. Should a larger quantity be used, a pungent heat in the palate and fauces will be felt, which will be succeeded by general tremors.

The taste is moderately bitter; the odour faint and narcotic. The active principle is supposed to be an alkaloid, first discovered by Pallas, and subsequently examined by Brandes, who has named it *aconitia*. Peschier states that this alkaloid forms crystallizable salts with acids, which possess the poisonous qualities of the plant. He also found that it contained an acid which forms an indissoluble compound with baryta; a small quantity of waxy matter, phosphate, malate and carbonate of lime; and it is owing to these salts that the infusion precipitates nitrate of silver, and subacetate of lead, and all the metallic sulphates. Aconitia is procured in the form of transparent yellow needles, very bitter to the taste. Unlike the other vegetable alkaloids, Aconitia is soluble in cold water; but scarcely so in cold alcohol,

although very soluble in the same menstruum when boiling. These analyses, however, are considered by some to need confirmation. Probably discrepancies have arisen from different species having been subjected to examination, which differ in effects and constitution. The deleterious and acrimonius qualities of the plant are nearly lost by drying; and alcohol and water extract its virtues very imperfectly.

Symptoms.—The aconite is one of that class of poisons which acts through the medium of the nervous system, and can produce death without being absorbed. When taken in an overdose the following symptoms quickly ensue: viz. intense heat, and numbness of the throat and mouth, violent nausea, giddiness, convulsions, violent purgings, mania, and cold sweats; which terminate in death.

It appears that M. Bichat was the first who ascertained that "the brain is not directly necessary to the action of the heart, and that when the functions of the brain are destroyed, the heart continues to contract for some time afterwards, and then ceases, only in consequence of the suspension of respiration, which is under the influence of the brain." To prove these assertions, Mr. Brodie, in the true spirit of philosophical research, instituted a series of experiments, with different vegetable poisons, amongst which is *aconite*, and has established the truth of these important views.

"An ounce of the juice of the leaves of Aconite was injected into the rectum of a cat. Three minutes afterwards he voided what appeared to be nearly the whole of the injection; he then stood for some minutes perfectly motionless, with his legs drawn together; at the end of nine minutes from the time of the injection he retched and vomited; then attempted to walk, but faltered and fell at every step, as if from giddiness. At the end of thirteen minutes he lay on his side insensible and motionless, excepting some slight convulsive motions of the limbs; the respiration became slow and laboured; and at forty-seven minutes from the time of the injection he was apparently dead. One minute and a half afterwards the heart was found contracting regularly, one hundred times a minute.

"It appears from this experiment that the juice of Aconite, when injected into the intestines, occasions death, by destroying the functions of the brain. From the analogy of other poisons it is rendered probable that it acts on the brain, through the medium of the nerves, without being absorbed into the circulation. This opinion is confirmed by the following circumstance:—If a small quantity of the leaf of Aconite is chewed, it occasions a remarkable sense of numbness of the lips and gums, which does not subside for two or three hours.

"I made a wound in the side of a young rabbit, and introduced, between the skin and muscles, about twenty drops of the juice of Aconite. Twenty-three minutes afterwards he was affected with symptoms in all essential respects similar to those which occurred in the experiment already related, where the juice was injected into the rectum; and at the end of forty-seven minutes from the application of the poison he was apparently dead. Two minutes after apparent death, the heart was found contracting, but very feebly."*

Dr. A. Thomson says, "the powdered leaves have at first a sweetish taste, which however is soon followed by an acrid burning sensation, accompanied with a profuse salivation; and if an extract of them be given without the greatest caution, it acts first on the stomach and then on the nervous system: producing vomiting, hypercatharsis, vertigo, cold sweats, delirium, and convulsions which terminate in death. If placed on the eyelids it causes tears to flow, but it produces no sensation of heat, and when the powder is sprinkled upon an ulcer, it causes neither heat nor pain."

It is asserted, that the effluvia arising from the herb in full flower, has so overpowered some persons as to produce loss of sight for a day or two; attended by faintings, swooning fits, and other untoward symptoms: and the juice, according to Snodder,† applied to a wounded finger, affected the whole system; not only producing pains in the hand and arm, but cardialgia, great anxiety, sense of suffocation, syncope, &c. The wounded part sphacelated also, prior to suppuration taking place.

But although such are said to be the effects of the leaves and exhalations from the flowers, the roots are unquestionably the most powerful part of the plant; and as a new root is formed each year by the side of the old one, the properties of which are very much diminished, if not entirely destroyed, by the exhaustion of growth, great care should be taken in the selection.

Linnæus says, the A. *napellus* is fatal to kine and goats, especially when they come fresh to it; but that it does no injury to horses, who eat it only when dry. He also relates in the Stockholm Acts that an ignorant surgeon having prescribed the leaves, and who, on his patient refusing to take them, took a dose himself, died in consequence. The following case is a further example of similar ignorance being similarly fatal to another surgeon, and they are curious, as medical men are not proverbially famous for taking physic.

A person having eaten some of the leaves of the A. *napellus*, became

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* Phil. Trans. 1811, fol. 186 and 194.

† Vide Albert. Jurisp. Med. t. 6, p. 724.

maniacal, and the surgeon who was called to his assistance declared, that the plant was not the cause of his disorder; and to convince the company that it was perfectly innocent, he ate freely of its leaves, and soon after died in great agony.—(Mordus in K. Vet. Acad. 1739, p. 41.)

"The root was given by way of experiment to four criminals: two at Rome, in 1524; and two at Prague, 1661. Two out of the four soon perished, and the others recovered with great difficulty. Mathiolus states, that a criminal was put to death by a drachm of it: and Dodonæus narrates the cases of five persons, who ate some of it by mistake, at Antwerp, and all died. Dr. Turner also mentions, that several Frenchmen, at the same place, partook of the shoots of the plant, mistaking it for masterwort, and that all died in the course of two days, excepting two players, who quickly evacuated all they had taken, by vomiting.

"John Crumpler, at eight in the evening, ate some salad, in which had been put by mistake a certain quantity of A. *napellus*. He felt immediately a burning heat on the tongue and gums, and a great irritation in the cheeks. He thought that the blood no longer circulated in his limbs; he had however no inclination to vomit. Perceiving the symptoms to increase, he drank about a pint of oil, and a great quantity of tea, which produced vomiting. The symptoms far from disappearing, were aggravated. At ten o'clock, Vincent Bacon, a surgeon was called in, and found him in bed with his eyes and teeth fixed, his hands and feet cold, the body, for the most part, covered with a cold perspiration, the pulse scarcely perceptible, and the breathing so short that it could with difficulty be perceived. He made him swallow two spoonsful of spirit of hartshorn, which occasioned coughing and vomiting: he then administered an infusion of *Carduus Benedictus*, until several vomitings were procured. The patient shortly had a stool and vomited afresh. The pulse became a little raised, but was intermitting, and extremely irregular. Some stimulating medicines were given; the next morning he was a great deal better, and the cure soon completed."*

Dr. Willis, in his work, De Anima Brutorum, gives also another instance of a man who died in a few hours from eating the young leaves of this plant in a salad. He likewise exhibited all the symptoms of mania.

Dissection throws no light on the effects of Aconite.

The plant which is stated to yield the Aconitia, and that which Stöerck recommended for use, is not the present officinal species, but according to De Candolle a variety of the A. *paniculatum*, which he has, in order to distinguish it as the plant introduced by the Baron into practice, denominated *Stöerckianum*.

Besides the A. *paniculatum*, *napellus* and *neomontanum*, it

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* *Phil. Trans*, 1737, *p.* 287.

appears from well-attested accounts that the A. *Cammarum* and A. *Anthora*, and all the species of the genus, are more or less poisonous; according to Bauhine, the A. *Lycoctonum*, has produced unpleasant symptoms, but the A. *ferox* is the most violent of all.

This species is figured by Dr. Wallich in his *Plantæ Asiaticæ variores*. The native Indians use it to poison the water tanks, in order to impede the progress of an army. An attempt of this kind was made at Hotoura during the Napal war, but it was discovered in time to save the soldiers. They also use it for poisoning spears, darts, and arrows.

TREATMENT.—The plan of treatment is the same as that recommended under the article "*Belladonna*." Bleeding has been advised, but it should never be resorted to, till the pulse becomes full, or apoplectic symptoms supervene.

MEDICAL PROPERTIES AND USES.—The Aconite thus invested with terror, has however, as Don observes, been so subdued, and reduced to such a manageable state, as to have become a very powerful remedy in some of the most troublesome disorders incident to the human frame. It is to Baron Stoerck* that we are principally indebted for our knowledge of this potent medicine; which, according to his account, is diuretic, as well as diaphoretic, and narcotic. He administered it for intermittent fevers, chronic rheumatism, gout, exostosis, paralysis and scirrhus, and narrates many well-marked cases of these diseases, in which it was eminently successful. He appears to have been well acquainted with the potency of the drug he was administering; and therefore recommended small doses to be given at first, which were very gradually increased.† His observations led to its employment in other diseases, and it has been found useful in amaurosis, scrofula, venereal nodes, &c.; but in consequence of its uncertain powers, alarming symptoms have been produced, which have

* See Stoerck's "*Libellus quo demonstratur Stramonium, Hyoscyamum, Aconitum, non solum tuto posse exhiberi usu interno hominibus, verum et ea esse remedia in multis morbis maxime salutifera.*" 1762.

† Si vero mali nihil superveniat, lenta et prudenti manu augenda est dosis, donec optatus observetur effectus; dein autem augere amplius dosim non est necesse, quamdiu idem effectus continuat.

caused it to fall into general neglect. Dr. Davy, however, in a letter to Dr. Paris, says: "In some cases of chronic rheumatism, and in some of intermittent fever, complicated with visceral disease, it (the extract) has had a beneficial effect not to be mistaken; the dose has been from one to two grains." Its diaphoretic effect he did not observe. We have had no experience of the internal administration of Aconite, but the extract applied as a plaster, in the same form as that we have already recommended for Belladonna, is a very useful application to rheumatic affections It is usual to combine either the powder or the extract, with some antimonial preparations, calomel, camphor, ipecacuanha, guaiacum, &c. The extract is most certain in its effects; and as well as the powder must be given in small doses at first.

Doses.—Of the extract, from half a grain to two.

Of the powder, from two to ten grains.

Off. prep.—Extractum Aconiti. *L. E.*

Viola odorata

VIOLA ODORATA.

Sweet Violet.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. CAMPANACEÆ, *Lin.* CISTI, *Juss.* CISTINÆ VIOLACEÆ, *Burn.*

GEN. CHAR. *Calyx* of 5 sepals extended at the base. *Corolla* of 5-petals, irregular, the under one spurred at the base. *Anthers* cohering, the two lower spurred at their backs. *Capsule* 3-valved, 1-celled.

SPEC. CHAR. *Stem* none. *Scyons* creeping. *Leaves* cordate, smooth, as well as the footstalks. *Sepals* obtuse, lateral petals with a hairy line in the centre.

β alba. With white, or reddish flowers.

Syn.—Viola martia purpurea, *Raii. Syn.* 364. *Bauh. Hist. v.* 3. 542. *f.*
Viola nigra, sive purpurea, *Ger. Em.* 850. *f.*
Viola n. 558. *Hall. Hist. v.* 1. 240.
Viola odorata, *Lin. Sp. Pl.* 1324. *Willd. v.* 1. 1162. *Fl. Brit.* 245. *Eng. Bot. v.* 2. *t.* 619. *Curt. Fl. Lond. fasc.* 1. *t.* 63. *Stokes Bot. Mat. Med. v.* 2. 440. *Hook. Scot.* 77.
FOREIGN. *Violette odorante*, Fr.; *Viola Mammola*, Ital.; *Violeta*, Span.; *Blaue veilchen*, Ger.; *Pachutschaja fialk*, Russ.; *Kiet tuong hoa*, Chin.

THE subject of this article is a common indigenous plant, growing in most parts of our island, and universally esteemed for the beauty of its flowers, and the sweetness of their scent. It is most frequently found in woods, and moist banks; but a variety, with double flowers, is chiefly cultivated for medicinal purposes.

The plant has a creeping stem, and increases by runners, which throw out many fibrous radicles. The leaves are heart-shaped, serrated, smooth above, somewhat wrinkled, petioled, and of a dark green colour. The flowers which appear in March, stand

upon smooth channelled foot-stalks, taller than the leaves, bearing above their middle a pair of small lanceolate bracteas. The calyx consists of five oblong acute leaves. The flowers are drooping, deep purplish blue, and pale in the mouth; the corolla consists of five unequal petals; the two lateral ones are opposite and bearded near the base, the posterior is slightly keeled and has a horned nectarium; the stamens are five, nearly sessile, and terminate in a membranous expansion that covers the upper part of the germen, which is roundish, with a falcated pistil.—Fig (*a*) represents the calyx and pistil; (*b*) the anthers with the nectaries or torus; (*c*) the petals separate; (*d*) the unripe impregnated ovary; (*e*) the mature ovary; (*f*) the capsule dehiscing elastically by valves; (*g*) a seed.

The violet is a native of every part of Europe, and Desfontaines says, that it is common in Barbary, in the palm groves, where the blue and white grow promiscuously, and flower in the winter. Hasselquist found it in Palestine and Japan, and Loureiro saw it in China, near Canton. The ancient fables feigned that violets were the first food of the cow Io, one of Jupiter's mistresses, and hence the greek word Ion; whence some would derive its modern appellation, while others think *Viola* is rather indicative of the powerful scent of the plants, q. d. "A vi olendi." Again, etymologists, who are most ingenious and indefatigable persons, have ventured a further guess, and think it may be a diminutive of *via*, "quod juxta *vias* nasci amat." It has always been a favourite with poets; and were we to indulge in quotations, we could fill several pages with their inspirations. We shall merely make one or two extracts:

"There was a mark on Laïs' swan-like breast,
(A purple flower with its leaf of green,)
Like that the Italian saw when on the rest
He stole of the unconscious Imogene,*
And bore away the dark fallacious test
Of what was not, although it might have been,
And much perplexed Leonatus Posthumus;
In truth, it might have puzzled one of us.

* That flower, however, was a cowslip.

"The king told Gyges of the purple flower;
(It chanced to be the flower the boy liked most;)
It had a scent as though love, for its dower,
Had on it all his odorous arrows tost;
For though the rose has more perfuming power,
The violet (haply 'cause 'tis almost lost,
And takes us much more trouble to discover,)
Stands first with most, but always with a lover."

BARRY CORNWALL.

"Where to pry aloof,
Atween the pillars of the sylvan roof,
Would be to find where violet beds were nestling,
And where the bee with cowslip-bells was wrestling.
Gay villagers upon a morn of May,
When they have tired their gentle limbs with play,
And formed a snowy circle on the grass,
And placed in midst of all that lovely lass
Who chosen is their queen:—with her fine head
Crowned with flowers, purple, white, and red;
For there the lily and the musk-rose sighing,
Are emblems true of hapless lovers dying:
Between her breasts, that never yet felt trouble,
A bunch of violets, full-blown, and double,
Serenely sleep."

KEATS.

OVID refers to its vulnerary properties:

"Ut si quis violas, riguove papaver in horto,
Liliaque infringat, fulvis hærentia virgis."

Lib. x. v. 190.

QUALITIES AND CHEMICAL PROPERTIES.—The odour of violets is particularly pleasant, but they are somewhat bitter to the taste. They yield their colour and flavour to boiling water. At a sitting of the Académie Royale de Médecine, M. Boullay read a paper on the analysis of the violet, *viola odorata*, from which it appears that it contains an active alkaline principle, which is bitter and acrid, similar to the *Emetine* of Ipecacuanha,* and which he proposes to name, *Emetine of the violet, indigenous emetine*, or *violine*. According to M. Orfila, it is energetically poisonous. It is found to reside equally in the root, leaves, flowers, and seeds of the plants; but associated with

* For the method of procuring Emetine, vide Magendie's Formulary, by Haden, fol. 60.

different proximate principles, so as to have its action on the animal system modified. It is procured in the same manner as that from Ipecacuanha, and possesses the same properties, excepting its being united to the *malic* acid, instead of the *gallic*. (*Journal de Pharmacie, Jan.* 1824.)

Medical Properties and Uses.—It is said, that the sherbet that is most esteemed by the Turks, and which is drunk by the Grand Signor himself, is made of violets and sugar. The petals were formerly used as a laxative, one drachm of which, in powder, operates pretty freely; and two ounces of the root, infused in water, will both purge and vomit. The syrup is not now used medicinally, but it, as well as an aqueous tincture of the flowers, is a useful chemical test; uncombined acids changing the blue colour to a red, and alkalies to a green.

Off. prep.—Syrupus Violæ. *E. D.*

XXX

CASSIA SENNA.

Senna, or Egyptian Cassia.

Class X. DECANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. LOMENTACEÆ, *Lin.* LEGUMINOSÆ, *Juss.* CÆSALPINIEÆ, *De Cand.* CASSIACEÆ, *Burn.*

GEN. CHAR. *Calyx* 5-leaved, the sepals onbeorlescent at the base. *Petals* 5, unequal. *Stamens* ten, free; three superior, barren; the 3 lower ones beaked, and longer than the four middle ones, which are short and straight.

SPEC. CHAR. *Leaflets* in five or six pairs, lanceolate, equal; a gland above the base of the petioles.

Syn.—Senna Alexandrina, *Raii Hist.* 1742; *Bauh. Pin.* 397; *Moris. Hist.* 2. 201. *s.* 2. *t.* 24; *Dod. Pempt.* 361.
Senna Officinalis, *Gærtn. de Fruct.* ii. 312. *t.* 146.
Cassia Lanceolata, *Lam.* 22. *Forskal Egypt*, 85. *n.* 58.
Cassia Senna, *Lin. Sp. Pl.* 9. *Willd.* ii. 513. *Stokes Bot. Mat. Med.* ii. 457.
FOREIGN.—*Sené*, Fr.; *Senna*, Ital.; *Sennablätter*, Ger.; *Senà*, Arab.; *Sena Mecci*, Hind. *Sana pat*, Beng.; *Nilavérsi*, Tam.

THE plants which furnish the leaves known in commerce under the name of Senna, are low shrubs, growing spontaneously in Syria, Arabia, and Upper Egypt, whence the drug is imported into Europe, chiefly from Alexandria; and hence it has obtained the name of Alexandrian Senna. It is cultivated in Italy, the West Indies, and some other parts of the world. According to Burckhardt, the best grows in the valleys of Nubia, where it is called *Abreyyia*; flowering in July and August. In our stoves the plants remain shrubby, but in the gardens become annuals.

The genus *Cassia*, of which *senna* is a section, includes a very large assemblage of species; the two which afford the officinal leaves are C. *obovata*, and *lanceolata*, the latter of

which is called in the Pharmacopœia, C. *Senna*. The former is the acknowledged officinal species of the Italians, but the leaves of both are mingled in commerce. The colours of the leaves afforded by these two plants are somewhat different, "those of the *lanceolata* being a bright yellowish green; those of the *obovata* green without any yellowish cast. With the true senna are mixed the leaves of another plant, the *Cynanchum Arquel.* Rouillon says that at Cairo the traders mix these in the proportions of 500 of C. *lanceolata*, 300 of C. *obovata*, and 200 of Cynanchum Arquel."—(*Don.*)

The Sennas rise with a somewhat woody, erect, branching stem, to the height of about two feet. The leaves are alternate, smooth, flat, and pinnated; each leaf is composed of five or six pairs of oval, entire, pointed, sessile leaflets, about an inch long, and one fourth of an inch broad, of a firm texture, and bright yellowish green colour. The flowers are pale yellow, borne in loose axillary racemes, on the upper part of the stem. The calyx is monophyllous, five-toothed; the teeth are obtuse, concave, and deciduous. The corolla consists of five roundish, entire, concave petals, the three lower ones largest; the filaments are ten, the three inferior ones longer than the others, and furnished with large curved anthers: the germen is cylindrical, supporting a short incurved style, and an obtuse stigma. The fruit is described by Gærtner as an ovate kidney-shaped membranous legume, with foliaceous appendages, marked with capillary, transverse, parallel striæ, bivalve, with six or nine cells, and divided by very thin, transverse partitions, each containing one oblong heart-shaped seed. Fig. (*a*) represents a petal; (*b*) a seed; (*c*) a pod; (*d*) a leaf of the Cassia *obovata*; (*e*) of C. *lanceolata*; (*f*) of C. *acutifolia*; (*g*) of Cassia *Marylandica*; (*h* and *i*) views of the flower of the last named species, showing the irregularity of the petals and stamens.

According to Olaus Celsus, the Greek word *κασσια* which is used by Dioscorides, is derived from the Hebrew *Ketzioth*, rendered in the septuagint by *κασσιαν*; and this has been latinized by Cassia. *Senna* is but slightly varied from Sena, or Senna, the Arabic name for the plant; and even this is said to own a

Hebrew origin, which will be found used in Isaiah xxxvi. 12, and which Mr. Rootsey says he should translate "sedes liquidæ."

It has long been famed, even proverbially, for its cathartic powers: thus Shakspeare says in Macbeth,

> "What rhubarb, *senna*, or what purgative drug
> Would scour these English hence?"

The purgative qualities of Senna were known to the Arabian physicians, Serapion and Mesue, who flourished about the beginning of the ninth century, and used it as a medicine. Actuarius, a Greek physician, who lived in the thirteenth century, also notices it, but like Mesue, employed the pod, not the leaves.

Senna has been grown in England, but as it is an annual, its seeds must be sown in the early part of the spring on a hot-bed; "and when the plants are fit to remove, each must be placed in a separate pot, filled with light earth, and plunged into a moderate hot-bed, where they should be shaded till they have taken fresh root; after which they should have fresh air admitted to them, every day, in proportion to the warmth of the season, and should be frequently watered. When the plants have filled the pots with their roots, they should be shifted into larger; and if they be too tall to remain in the hot-bed, they must be placed either in the stove, or a glass case, where they may be defended from the cold, but in warm weather have plenty of air. It is very rare that seeds are perfected in England."

In our English market, three sorts of Senna are met with, viz.—the Alexandrian, Tripolian, and East Indian. The two former are very much alike in appearance, but the Alexandrian has the most aromatic and grateful odour, and possesses higher purgative powers. The East Indian has a leaf as long again as either of the other two, and according to Dr. Ainslie, "is a product of Arabia Felix, (about Mocho,) or from a more northern part of that country, the territory of Orbuarish. The Senna in common use amongst the Indian practitioners is the *blunt-leaved*, (Senna Italica. S. foliis obtusis. Bauh. Pin. 397.) It is a common plant on the Coromandel coast, but it is not nearly so valuable a medicine as the sharp-pointed Senna.

Most of the Senna used in England is the produce of Egypt, the best sort is called in Nubia, where it grows wild, *guebelly.**

Bartholin asserts, that the leaves of Colutea *arborescens*, (common bladder Senna,) which is cultivated in this country as an ornamental plant, may be substituted for those of senna.

According to Deslongchamps, in his "Manuel des Plantes Usuelles Indignes," p. 30 of the 2d Memoir, vol. ii., there are six different plants which might be substituted for Senna; viz.—Globularia *alypum*; Anagyris *fœtida*; three species of Daphne; and the Cneorum *tricoccon*; the best of which seems to be the first; three drachms of the leaves producing ten evacuations. The last, which is indigenous to America, is stated by Barton to be equal in its effects to the Alexandrian senna. In America, the leaves of the Cassia *Marylandica* are medicinally employed as a cathartic, superseding the use of Alexandrian and Indian Senna.

M. Nectoux, quoted by Dr. Barton† entertains the belief, that authors have hitherto been mistaken in the opinion, that the senna of the shops is the produce of the Cassia Senna of Linnæus. His investigations led him to believe, that "the true Senna is in reality a weed, with which the real Senna is adulterated in Egypt, to augment the quantity produced by the annual growth of the other two plants, which constitute the [illegible]"

"Nubia is a narrow valley through which the Nile flows. The is confined on the two sides, alternately, by a lofty chain of granitic mountains. Senna and arquel are the chief productions of this country. They are not the objects of particular cultivation, but grow naturally on the sides of the hills and in the ravines. Each person has the privilege of gathering what grows in his district. Two crops are annually made, the productiveness of which depends on the duration of the rains which fall periodically every year. The first and most fruitful is gathered at the termination of the rains, which commence at the summer solstice, and end in August and the beginning of September. The second crop is gathered in April, and is small. No expense attends the preparation of these plants, which consists in cutting and spreading them on the rocks to dry. This process in that warm climate only occupies a single day. The senna and arquel are put up in small bales, weighing about a quintal each, and are conveyed by camels to Sienne and Daraa. They are sold for 300 to 340 parats (eleven or twelve francs) each. They are afterwards carried to the farmer general, at Cairo, who purchases them at eleven or twelve pataques, (thirty to thirty-three francs,) and sold by him to the European factors for thirty or thirty-three pataques (one hundred and six francs) the quintal. M. Nectoux was informed on good authority, that the produce of the two crops varies annually, from

seven to eleven hundred quintals—one third of which is arquel. The demand from Europe is generally from fourteen to fifteen hundred quintals; and never less than twelve. The Egyptian merchants therefore mix from three to four hundred quintals of the *senna-belledy*, or wild senna (cassia senna of Linnæus) with that brought from Nubia. This adulteration is made at the *entrepots* of Kene, D'Esnech, Darao, and Sienne; around which places the senna-belledy grows abundantly. M. Nectoux concludes by inviting the attention of his government to the introduction and culture of senna, (*cassia lanceolata* of Lamarck,) and arquel, (*cynanchum oleæfolium* of Nectoux C. arquel,) in its colonies, with the view to avoid this adulteration."

Qualities and Chemical Properties.—The leaves of Senna have a faint and sickly odour, and to the taste are at first sweetish, and afterwards nauseous and bitter. It appears that when cultivated in the south of France, this bitter principle is lost, and although destitute itself of purgative properties, its absence renders the leaves less aperient; and as the pods, the part used by the Arabian physicians, contain only the purgative principle, they are comparatively feebie, unless the defect be compensated by art. Dr. Cullen has observed, that a much smaller quantity of the leaves is required for a dose if they be infused in company with some bitter plant; and it has been found that the watery infusion of *rhubarb* is rendered more purgative by the addition of *calumba*. The infusion is of a dark reddish brown colour, and on exposure to the air, the extractive matter which it contains, becomes oxidated; it is therefore apt to gripe, unless combined with aromatics and soluble tartar, or other neutral salts. Some affirm that a pint of boiling water only takes up the active matter of one ounce of the leaves; but if three ounces be used, and submitted first to expression and afterwards to infusion, it will be found that their virtues are gone. Besides extractive, resin, mucilage, saline matters, and a bitter element, which senna contains, M. M. Lassaigne and H. Fenuelle have separated the purgative principle, to which they have given the name of *Cathartine*. A decoction of the leaves was made, and after being filtered, was precipitated by acetate of lead. The precipitate collected was diffused through water, and sulphuretted hydrogen passed through it. The liquor filtered was evaporated to dryness, and digested in alcohol, and the alcoholic solution then evaporated to dryness. It contained acetate of potass, which was separated by alcohol acidulated by sulphuric acid; then filtering to separate the sulphate of potass insoluble in this fluid; precipitating the excess of sulphuric acid by acetate of lead; decomposing this latter salt by sulphuretted hydrogen; filtering again, and evaporating to dryness, a substance was obtained, which was considered the purgative principle of Senna. This substance is uncrystal-

lizable, of a yellow reddish colour; of a particular smell: and of a bitter nauseous taste. It is soluble in alcohol and water, in all proportions; insoluble in æther. It becomes moist in the air; and purges in very small doses.*

Precipitates are produced from the infusion of Senna, by the strong acids, the alkaline carbonates, lime water, solutions of nitrate of silver, oxymuriate of mercury, superacetate of lead, tartarized antimony, and infusion of yellow bark: which are therefore *incompatibles*.†

Medical Properties and Uses.—Senna is an active purgative, and as its operation can generally be relied on, is frequently administered in the form of infusion, combined either with manna or tamarinds, soluble tartar, Epsom salts, &c. Dr. Cullen recommends coriander seeds, and Dr. Paris *Bohea tea*, to cover its nauseous taste; and guaiacum is said to increase its powers. It is very apt to gripe, and is therefore contra-indicated when the bowels are subject to spasmodic pains. The lenitive electuary (confectio sennæ) is an elegant and agreeable laxative, and is usually recommended for habitual costiveness, and to pregnant females. We have lately had our attention excited to a preparation, called a concentrated essence, made, we understand, without a high temperature being applied: and one drachm to an ounce of water will form a mixture of Senna equal in strength to the infusion which is usually prescribed. When it is considered that the infusion will not keep many hours without precipitating an oxidized extract, and that it is often wanted at a minute's notice, we think that our readers will be thankful for our apprising them of so valuable a preparation, which after several trials we have ascertained to be worthy of reliance.

Off. Prep.—Tinctura Sennæ. *L. E. D.*‡
Confectio Sennæ. *L. E. D.*
Extractum Cassiæ Sennæ. *E.*
Infusum Sennæ. *L. D.*
Infusum Tamarindi cum Senna. *E. D.*
Pulvis Sennæ compositus. *L.*
Tinctura Sennæ composita. *E.*
Syrupus Sennæ. *D.*

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* Annales de Chimie, xvi. p. 90.

† Thomson.

‡ As this tincture is a domestic remedy known by the name of Daffy's Elixir, we join the method of preparing it;

"Take of Senna leaves, three ounces; Carraway seeds bruised, three drachms; Cardamom seeds bruised, a drachm; Raisins stoned, four ounces; proof spirit, two pints. Macerate for fourteen days in a gentle heat, and strain."

It is an odontromachic and purgative, and is efficacious in flatulent cholic, atonic gout, and as an opening medicine for those whose bowels have been weakened by intemperance.

Dose.—From a quarter of an ounce to one ounce.

XXXI

PAPAVER RHŒAS.

Red Poppy.

Class XIII. POLYANDRIA.—*Order* III. MONOGYNIA.

Nat Ord. RHŒADEÆ, *Lin.* PAPAVERACEÆ, *Juss. De Cand. Burn. &c.*

GEN. CHAR. *Calyx* 2-leaved. *Petals* 4. *Capsule* superior, 1-celled, opening by pores under the persistent stigma.

* * *Capsules smooth.*

SPEC. CHAR. *Capsules* smooth, nearly globular. *Stem* many-flowered, bristly; bristles all spreading. *Leaves* pinnatifid.

Syn.—Papaver laciniato folio, capitulo hispido longiore, *Raii. Syn.* 308.
Papaver erraticum, *Camer. Epit.* 371, 1; *Matth. Valgr. v.* 2. 404. *f.*
Papaver, n. 1064. *Hall. Nomencl.* 95. *Hist. v.* 2. 16.
Papaver Rhœas, *Lin. Sp. Pl.* 726. *Willd. v.* 2. 1146. *Fl. Brit.* 567; *Eng. Bot. v.* 9. *t.* 645; *Curt. Lond. fasc.* 3. *t.* 32; *Stokes, Bot. Mat. Med. v.* 3. 192; *Hook. Scot.* 168.
PROVINCIALLY.—*Corn Poppy; Corn Rose; Cop Rose.*
FOREIGN.—*Coquelicot*, Fr.; *Papavero salvatico*, Ital.; *Adormidera sylvestre, Amapola*, Span.; *Die blumen der klapprose*, Ger.

THE Red Poppy is an indigenous annual, growing plentifully in corn-fields, where it frequently proves a very troublesome weed; flowering in June and July. Its geographical distribution is extensive; but it is said not to occur in America.

The stem is herbaceous, upright, branched at top, a foot or more in height, and clothed, as well as the flower-stalks, with strong hairs which spread horizontally. The leaves are sessile, pinnate, or bi-pinnatifid, serrated, and covered with short hairs. The flowers are large, solitary, and stand upon long hairy foot-stalks; the calyx consists of two ovate, hairy, concave leaves, which fall before the flowers expand; the petals are four, large, roundish, undulated, of a deep rich scarlet colour, and generally marked with a black spot at the base. The germen, which be-

comes a smooth, urn-shaped capsule, is ovate and large, without any style; the stigma is shield-shaped, sessile, scolloped on the edges, and having ten or twelve rays. The fruit is a one-celled capsule, crowned with the stigma, and containing numerous kidney-shaped seeds attached to parietal placentæ. Fig. (*a*) represents a single stamen; (*b*) a section of the capsule; (*c*) a capsule entire to show the dehiscence by minute valves or pores.

This species of Papaver is readily distinguished from the *Papaver dubium*, which it closely resembles, by the hairs spreading horizontally on the flower-stalks as well as on the stem, and by the short roundish capsule. Being a very common weed, although probably not a native of this country, but introduced with seed-corn from the east, it has received very numerous names; such as *Corn poppy*, *Corn rose*, *Cop rose*, *Canker rose*, *Head-wark*, &c. And like most other pretty flowers, it has been celebrated by poets in different ways; thus, from flowering amongst the corn, the red poppies have been supposed, by one, to be upon the look out for Ceres:

"And the poppies red,
On their wistful bed,
Turn up their dark blue eyes for thee."

In a Latin poem, by Mr. Landor, Ceres is supposed to have created the Poppy to assuage her anguish during the search for her daughter; and the statues of the goddess are generally adorned with Red Poppies, from their being companions of wheat; but

"——Poppies nodding, mock the hope of toil."
Crabbe's Village.

Qualities and Uses.—The petals of the Red Poppy should be gathered just as they begin to blow. They possess a faint narcotic odour, and are generally thought to have a slightly sedative effect. They yield their virtues to boiling water, but are merely used for their fine colouring matter. A syrup of them is directed in the Pharmacopœias, which was formerly prescribed in coughs and catarrhal complaints; but no faith whatever is now placed in its medicinal powers. Opium has been obtained from the capsules, but in so small a quantity, as to render it an object unworthy of the trouble. Still it must be stated, that by some foreign practitioners this extract, as a sedative, is preferred to opium itself.

Off. Prep.—Syrupus Rhœados. L. D.

ACORUS CALAMUS.

Common Sweet Flag.

Class VI. HEXANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. PIPERITÆ, *Lin.* AROIDEÆ, *Juss. De Cand.* &c. E.E CALLACEÆ, *Bart.*, ACORINÆ CALLACEÆ, *Burn.*

GEN. CHAR. *Spadix* cylindrical. covered with sessile florets. *Perianth* 6-sepalled. *Style* 0. *Capsule* indehiscent, 3-celled.

SPEC. CHAR. Leafy flower-stalk or false spatha rising high above the spadix.

Syn.— Acorus verus, sive Calamus officinarum, *Raii. Syn.* 437; *Park.* 140.
Acorus verus officinalis, false Calamus, *Ger. Em.* 62. *f.*
Acorus, *n.* 1307. *Hall. Hist. v.* 2. 164.
Acorus undulatus, *Stokes Bot. Mat. Med.* 2. 282.
Acorus Calamus, *Lin. Sp. Pl.* 462; *Willd. v.* 2. 199; *Fl. Brit.* 373; *Eng. Bot. v.* 5. *t.* 336; *Bart. Veg. Mat. Med. v.* 2. *t.* 30. *p.* 63.
Typha aromatica, clava rugosa, *Moris. v.* 3. 246. *t.* 13. *f.* 4.
ENGLISH.—*Common Sweet-Rush*, *European Sweet-Rush*, *Sweet-smelling Flag*, *Myrtle-flag*, *Sweet Myrtle-grass*, or *Calamus Aromaticus.*
FOREIGN.—*Acorus odorant*, Fr.; *Calamo aromatico*, Ital.; *Acoro Calamo* Span.; *Kalmus wurtzil*, Ger.; *Bach*, Hind; *Vacha*, San.

part of the northern suburbs of the metropolis with water. We observed it sparingly in a pond in Copenhagen fields; and also on Wimbledon Common. It is remarkable, that this plant is unknown in Scotland.

The rhizoma, which spreads horizontally, is long, about an inch thick, spongy, full of rings or joints arising from the decay of former leaves, somewhat compressed, externally of a greenish white colour, which changes in drying into a yellowish brown, internally white, with many long *radicles*, which spring from the under side. From the joints, and from the point between the lateral union of the roots, bunches of blackish fibres are always found when the plant has grown in its natural wet situations. The leaves are two or three feet high, sword-shaped, pointed like those of the common Iris, sheathing, and of a pale yellowish green colour; they spring directly from the root, are usually waved on one of the edges near the top, and emit, when bruised, a strong aromatic odour. The flowers are tesselately arranged on a spadix, issuing laterally about a foot above the ground, from the middle of a naked stalk or scape, which rises beyond it, and having the appearance of a leaf. The spadix is solitary, two or three inches long, cylindrical, and attenuated at its apex and base. It is crowded with numerous small pale green flowers, consisting of six equal concave pieces, and stamens varying in number, which have thick filaments, alternate with the pieces of the perianth, and double anthers. The germen is elliptical, without any style, and crowned by an obscurely 3-lobed stigma. The capsule is triangular, membranous, of three cells, and containing many seeds. Fig. (*a*) represents a perfect flower; (*b*) a stamen; (*c*) an anther dehiscing transversely; (*d*) the pistil and germen; (*e*) a section of the ovary; (*f*) a fertile seed, with two abortive ovules; (*g*) section of the seed to show the embryo in the axis of the fleshy albumen.

Only two species of Acorus are described, viz. the subject of this article, and the A. *gramineus*, which is cultivated in China. Of the A. *Calamus*, authors mention two varieties, the *vulgaris*, European sweet-rush, sweet-smelling flag, or Calamus

aromaticus, which is also indigenous to America; and the *verus*, seu Asiaticus, Indian sweet-rush, or Calamus aromaticus, which not only grows in marshy ditches, but in more elevated and dry places in Malabar, Ceylon, Amboyna, and other parts of the East Indies: it is said to differ but slightly from the European, except in being a little more tender and narrow, and of a more hot and pungent taste.*

Propagation and Culture.—According to Miller, the Sweet Flag will succeed very well in a garden; but never produces its spikes unless it grows in the water. It delights in an open situation, and does not thrive in the shade. When the plant is fixed in a proper situation, it will multiply by its creeping roots fast enough.

Qualities.—The root has a warm aromatic odour, and a pungent, bitter, aromatic taste. "In the dried state the article is corrugated, of a yellowish brown colour, with many white elevated circles on the under side, whence the radical fibres issued. It breaks with a short rough fracture; is internally of a pale buff colour, and a spongy texture; both the smell and taste are improved by exsiccation."† It contains an essential oil, to which it owes its peculiar taste, and the aromatic flavour that it yields to those infusions, of which it is an ingredient; for the residium after distillation has a nauseous flavour dissimilar to Calamus. Hoffman obtained two ounces of essential oil from fifty pounds of the root, but Neuman and Cartheuser obtained it in a larger quantity. It contains a considerable quantity of fecula, which is dissolved in the infusion, and may be copiously precipitated from it by acetate, and superacetate of lead. Watery infusions of the root are strongly imbued with the odour, and have a warm bitter taste. Spirituous tinctures are more warm and pungent than aqueous infusions, but much less bitter, and have but little smell; and water applied after spirit, gains a considerable bitterness.‡ Hence it is evident that water is the best menstruum. The roots were formerly brought from the Levant, but

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* Barton's *Vegetable Materia Medica*, fol. 67.
† Thompson.
‡ Lewis, Mat. Med. p. 223, vol. 1.

our indigenous plant affords them quite as good, and the medical properties of the European, American, and Asiatic varieties do not differ.

Economical Uses.—The leaves are noxious to insects, and no kind of cattle eat any part of the plant. It has been suggested, therefore, that the leaves might be employed to destroy the larvæ and insects, which injure books and woollen cloths. The whole plant has been used by M. Bautroth for tanning leather; and it is supposed by Dr. Bohmer, that the French snuff, *a la violette*, receives its scent from this root. Throughout the United States, it is used by the country people as an ingredient in making wine bitters.*

Medical Properties.—The roots only of this plant are used in medicine, and candied, are said to be taken by the Turks, as a prophylactic against contagion. Six drachms of the bruised root to twelve ounces of boiling water, form an elegant infusion, which is strongly impregnated with the odour of the plant, and possesses a moderately warm and very bitter taste. This infusion is a most efficacious stomachic, and pity it is that a medicine growing in our own country should give place to exotic remedies of less value: "for it is successfully used in intermittents, even after bark has failed, and is certainly a very useful addition to Cinchona." Dr. Burton informs us, that the country people in America cure themselves of ague by a free use of the tincture, and asserts, that it has proved energetically beneficial in that distressing complaint to which sailors are so frequently subject from the nature of their life and diet, well known, particularly to naval surgeons, by the name of wind colic; given in hot decoction in the manner of ginger-tea, it quickly relieves the distressing swelling of the abdomen. It may be chewed by dyspeptic persons, and the juice swallowed with advantage, when tonics are required; and as it excites a copious secretion of saliva it sometimes relieves the pain of tooth-ache.—The dose in substance is from ℈ i. to ʒ i.

GRATIOLA OFFICINALIS.
Hedge Hyssop.

Class II. DIANDRIA.—*Ord.* II. MONOGYNIA.

Nat. Ord. PERSONATÆ, *Lin.* SCROPHULARIÆ, *Juss. De Cand.* &c. SCROPHULARIACEÆ, *Burn.*

GEN. CHAR. *Corolla* irregular, 2-lipped, 4-cleft, reversed. *Stamens* two, with two sterile filaments. *Capsule* 2-celled. *Calyx* 7-leaved; the two exterior leaves spreading.

SPEC. CHAR. *Leaves* ovato-lanceolate, serrated, 5-ribbed, smooth, somewhat longer than the flower-stalks.

Syn.—Gratiola *Camer. Epit.* 464; *Ger. Em.* 581; *Ritin. mon. t.* 157.
Gratiola vulgaris, *Park. Theatr.* 220. 1; *Mor. Hist.* 2. 479. *n.* 7. *g.* 5. *t.* 8. *f.* 7.
Gratiola centauroides. *Vail. Paris.* 95; *Bauh. Pin.* 279.
Gratiola alpina, *Bauh. Hist.* 3. 435; *Raii Hist.* 1885.
Digitalis minima, gratiola dicta, *Tourn. Paris.* 266. *Park.* 1. 229.
Gratiola officinalis, *Lin. Sp. Pl.* 24.; *Willd.* 1. 102.; *Scop. Carn. n.* 27; *Fl. Dan.* 363; *Woodv.* 132. *t.* 47. *Stokes* 1. 34.

FOREIGN.—*Gratiole*, Fr.; *Graziola*, Ital.; *Graciola*, Span.; *Gradenkraut*, Ger.; *Genadekruid*, Dutch; *Licharodotschnaja, trawa*, Russ.; *Konjtrud*, Polish.

THIS plant, the *Gratiola* of the Dispensatories, derives its generic appellation from the diminutive of *gratia*, grace or favour; and the epithet *gratia Dei*, by which it was formerly distinguished, is sufficiently expressive of the high estimation in which it was held by the ancients for its salutary qualities. It is a low perennial, not indigenous to this country, a native of the south of Europe, growing in most pastures, and flowering in June and July.

Haller observes, that about Yverdun, it is frequently found in such abundance as to be very injurious to the cattle: and that many meadows in the environs are rendered quite useless as pasture grounds, from the excessive prevalence of this plant.

From a cylindrical, white, creeping, jointed rhizoma, rise several slender, smooth, round, erect stems, to the height of a foot or eighteen inches. The leaves are numerous, lanceolate,

opposite, sessile, pointed, serrated towards the ends, of a bright green colour, two inches long, nearly half an inch broad, and obscurely punctured. The flowers are inodorous, about an inch long, axillary and solitary; the calyx consists of five elliptical pointed segments, with a pair of lanceolate spreading bracteas; the corolla is tubular, divided at the lip into four obtuse segments, the uppermost of which is broadest, emarginate and reflexed, the others straight and equal; the tube is yellowish, with reddish streaks; the limb pale lilac, or purple. The filaments are four, awl-shaped, shorter than the corolla, only two of which are furnished with anthers; the two perfect ones are shorter than the others, and are inserted at the base of the uppermost segment, about the middle of the tube of the corolla: the germen is ovate, superior, supporting a slender erect style, with a divided stigma. The capsule is ovate, bilocular, and contains numerous small seeds—Fig. *(a)* represents a flower, spread to show the two fertile, and two abortive stamens; *(b)* the pistil; *(c)* the capsule; *(d)* a section of ditto; *(e)* a seed.

Qualities and Chemical Properties.—It is inodorous, but impregnated with a bitter nauseous taste, which it is said sometimes produces a sense of constriction in the tongue. Maregraaf states that its watery extract is bitter, but that the bitter principle exists most abundantly in the resinous extract. Vauquelin has analyzed it, and obtained a bitter, active, uncrystallizable, resinous principle, which is soluble in alcohol, and requires a very large quantity of boiling water to dissolve it. "When sulphuric acid is added to the unstrained infusion, it emits the odour of tamarinds; and when the infusion is filtered and slowly evaporated, spicular crystals are formed, which appear to be tartaric acid."

From a paper read some time since by Dr. Whiting, at a meeting of the Medico-botanical Society of London, it appears that *Veratria*, the active principle of *Colchicum*, and white hellebore, has been most unexpectedly discovered in *Gratiola*; this will readily account for its violent effects, when given in over doses. It is a curious coincidence that the Eau Medicinale which was made from the Gratiola, should have been imitated by spirituous infusions of Colchicum and Veratrum, both containing the same active principle, and that the modern *Vinum Colchici* should have superseded this old *Vinum Gratiolæ*, formerly esteemed a specific in gout.

Poisonous Effects.—Given in over doses, it produces violent vomiting, and hypercatharsis; and M. Bouvin asserts that an injection of the decoction being administered to a female, produced great irritation of the sexual organs, and all the symptoms of the most violent ny[illegible]

"At a quarter past ten, three drachms and a half of watery extract of Hedge-Hyssop, were introduced into the stomach of a small strong dog, and the œsophagus was tied. At eight in the evening the animal had not exhibited any remarkable phenomenon. The next day, at ten in the morning, he uttered plaintive cries; he was lying down on the side, and expired an hour after: his breathing had not been impeded. The mucous membrane of the stomach exhibited, throughout its whole extent, a cherry-red colour: it was black wherever it forms the folds observed in the interior of this viscus; it was easy to be assured that this last alteration was the consequence of a certain quantity of black extravasated blood, within the space which separates it from the subjacent muscular coat. This last was nearly in its natural state; the interior of the rectum was evidently inflamed: all the remaining portion of the alimentary canal was a little red. The lungs did not appear affected; there was no serosity in the ventricles of the brain: the exterior cerebral veins were distended with black blood. The pia mater was injected, and of a vermillion red colour.

"Twenty-eight grains of the same poisonous substance, dissolved in four drachms of water, were injected into the jugular vein of another robust dog of middle size. An hour after, the animal had a motion; he experienced some giddiness, and became as it were insensible, lay down, and expired two hours after the injection. It was impossible to discover the least trace of alteration in the texture of the digestive canal."

M. Orfila concludes from numerous experiments:—

"1st. That an extract of Hedge-Hyssop produces a local irritation extremely violent.

"2nd. That it appears to be absorbed, and that its effects depend on the sympathetic lesion of the nervous system.

"3rd. That it is much more active when injected into the veins."

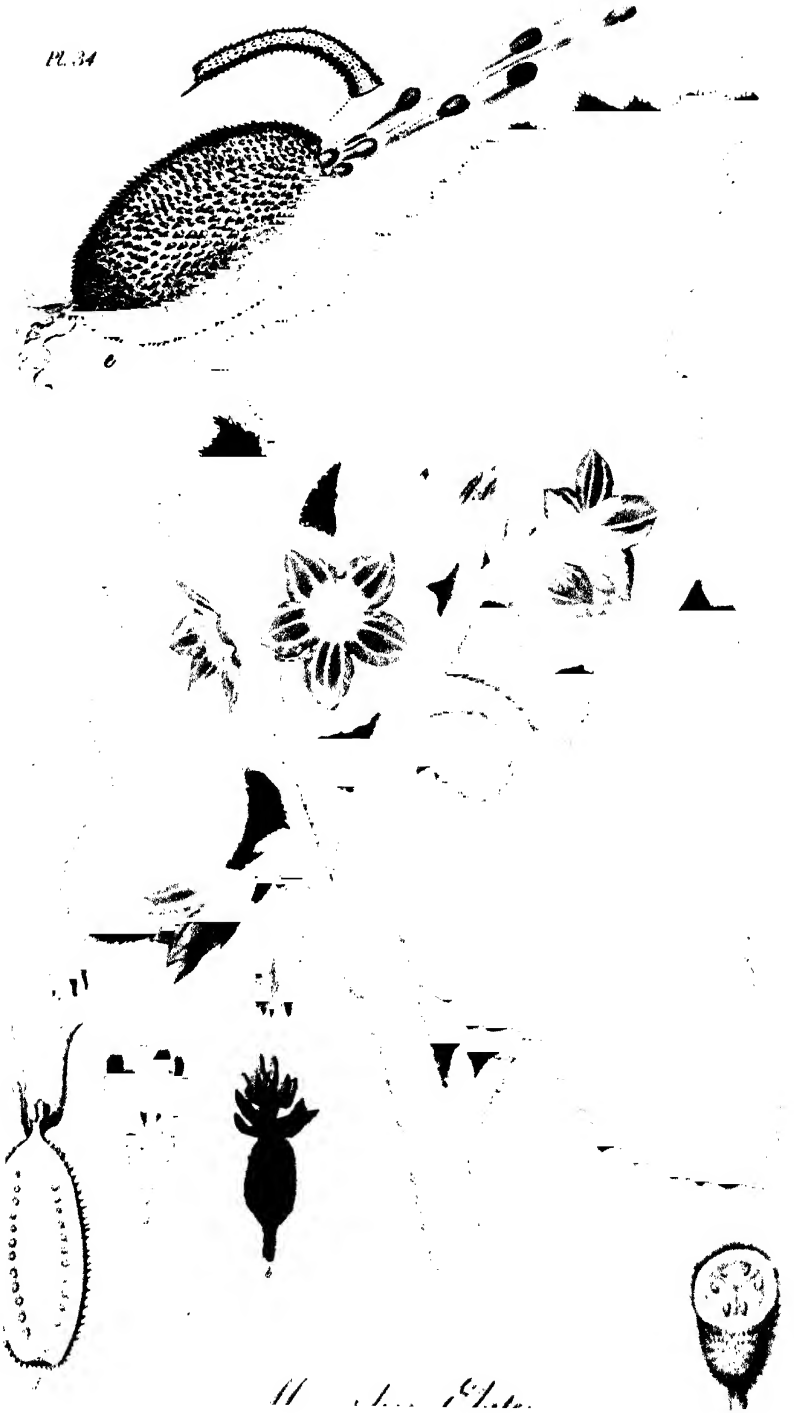
Medical Properties and Uses.—This medicine was formerly prescribed on the continent, as a hydragogue purgative, and diuretic; and Heurnius, Ettmuller, Hartmann, Joel, and others, have administered it successfully for dropsy of the cellular tissue; likewise of the peritoneum when unaccompanied by inflammatory action, and unallied with flaccidity of the muscular fibre, or with paleness. It has likewise been given in some other affections, as hypochondriasis, atonic gout, rheumatism, &c. which were accompanied, or appeared to be produced by, inactivity or torpor of the intestinal canal; while others have administered its resinous part, in small doses, to promote vomiting, or as a substitute for ipecacuanha in dysentery. Dr. Kostrzewski, of Warsaw, has offered some remarkable instances of its powerful influence in soothing and suspending irritation; and asserts that three maniacs, in the hospital at Vienna, were recovered by its use; that the most confirmed cases of lues venerea were completely cured by it; and that it usually acted by increasing the urinary, cutaneous, and salivary secretions.* Dr. Perkins, of

* Vide Dissert. de Gratiola. Vienna.

Coventry, states that it forms the basis of the Eau Medicinale, and that the recipe was given to him by the Count of Leiningen, who paid five hundred ducats for it. This nobleman was a person of extensive reading, and a munificent patron of the arts, and had been in early life a martyr to the gout; an exemption from which, for several years, he attributed to the use of this medicine. The following is the form:

" R Herbæ gratiolæ officinalis siccatæ unciam
Radicis ejusdem Herbæ semunciam incisæ, et contusæ: adde
Vini Hispanici uncias sedecim.
Digere leni calore per dies octo, et cola."

"Of this vinous tincture, a tea-spoonful is to be taken at bed-time, drinking after it half-a-pint of beef tea; and if after the lapse of twenty-four hours, all pain has not vanished, half a tea-spoonful more of the Gratiola wine is to be taken in a similar manner. Dr. Reece, who has paid particular attention to the preparation of this drug, and to its administration, very properly observes, that "a tea-spoonful is at all times a very indefinite measure, and liable to vary with fashion," and therefore recommends forty-five drops as the dose to begin with. This gentleman also remarks, "that in producing its effect of allaying irritation in gout and rheumatism, it was done without disturbing the system, or producing those effects on the general health, which attend the use of opium;" he has, therefore, with a laudable zeal, extended its use to allay morbid irritation of the intestines, and of the lungs; and has found that an oxymel made with the herb, is very efficacious in asthma, constitutional or winter cough, &c. He adds, that "in the use of the Gratiola, it must always be exhibited in the first instance so as to nauseate the stomach, or to produce an aperient effect on the bowels, and then kept as near to this dose, without producing any further unpleasant effect." According to Bergius, the dose of the herb in substance is from fifteen to thirty grains, but he states that a scruple often acts on the bowels, and produces nausea and vomiting. He also affirms that ten grains united with five of powdered gentian, administered twice a-day, has been useful in autumnal quartan agues. Of an infusion, made with ℥ij of the dried herb, to half-a-pint of boiling water, from ƒ ℥iv to ƒ ℥i may be given three times a-day. *Gratiola* is not admitted into the list of Materia Medica of the London College. The German physicians have long thought much more highly of the medicinal powers of Gratiola than their brethren of the British schools. Hufeland commends it for being "extremely efficacious in visceral absorption—jaundice, for example—and in ascarides; a circumstance which, as Thompson adds, is likely to be the case, from its operating on the rectum. In France, *Gratiola* is a favourite medicine among the peasantry, who use it both as an emetic and purgative; and its provincial synonyme is "Herbe à pauvre homme."



MOMORDICA ELATERIUM.

Wild, or Squirting Cucumber.

Class XXI. MONŒCIA. *Order* VIII. MONADELPHIA.

Nat. Ord. CUCURBITACEÆ, *Lin. Juss. De Cand.* GROSSULINÆ, CUCURBITACEÆ, *Burn.*

GEN. CHAR. Male. *Calyx* 5-cleft. *Corolla* 5-parted. *Filaments* three.

Female. *Calyx* 5-cleft. *Corolla* 5-parted. *Style* trifid. *Gourd* opening elastically.

SPEC. CHAR. *Leaves* heart-shaped, sinuated, rough. *Tendrils* none. *Fruit* elliptical and hispid.

Syn.—Cucumis sylvestris, *Camer. Epit.* 946.

Cucumis sylvestris, asininus dictus, *Ger. Em.* 912; *Bauh. Pin.* 314.

Cucumis agrestis [illegible] 108.

Momordica Elat[illegible] *Sp. Pl.* 1434.; *Willd.* iv. 601; *Woodv.* 121. t. 43. *Stokes Bot. Med.* iv. 466.

ENGLISH.—*Elastic Momordica; Wild, Squirting, or Asses Cucumber; Wild Balsam Apple.*

FOREIGN. *Momordique, Concombre sauvage, ou d'âne*, Fr.; *Concomero salvatico*, Ital.; *Cohombrillo*, Span.; *Eselsgurken, Der Balsamapfel*, Ger.; *Balsemappel*, Dutch.

WILD CUCUMBER is a hardy annual, growing spontaneously on waste grounds, in the south of Europe; flowering in June and July. It appears to have been introduced into this country at an early period, and is mentioned by Gerarde in 1596. With us, it is seldom cultivated except for curiosity. A few acres, however, are raised annually at Mitcham, in Surrey, and some other places, for the sake of the fruit, which yields the well known *elaterium* of medicine.

From the root, which is large and fleshy, somewhat resem-

bling that of bryony, issue several thick, round, rough, and trailing stems, divided into many branches, extending every way three or four feet, and destitute of tendrils. The leaves are irregularly heart-shaped, slightly sinuated, rough, hairy, of a greyish green colour above, paler underneath, and stand upon long footstalks. The flowers are axillary, much smaller than those of the common cucumber, of a straw-yellow colour, and are both male and female on the same plant: the male flowers stand on short peduncles, but the female sit on the germen; the corolla is divided into five acute segments, reticulated with green veins, and woolly; the filaments are short, tapering, inserted into the base of the corolla, and supporting recurved, double-headed, orange-coloured anthers; the style is short, cylindrical, three-cleft, and terminated by an oblong stigma. The fruit is watery, of a coriaceous texture, pendulous, oblong, of a greyish colour, and closely set with short bristles. The seeds when mature are black. When ripe, the pepo bursts on being touched, and throws out, with great violence, the juice and seeds, through the hole at the insertion of the footstalk.—Fig. (*a*) represents the stamens; (*b*) the pistil and germen; (*c*, *d*, and *e*) sections of the fruit with one pepo, in the act of dehiscence. The separation of the fruit from the peduncle, and violent dispersion of the juice and seeds, has persuaded Richard to distinguish this plant generically from the other *Momordicæ*, and he has proposed to name it *Ecballium*.

The term *elaterium* was used by Hippocrates to denote internal applications of a detergent or digestive nature, but more especially purgatives of a violent or drastic quality, from the word Ελαυνω, *agitomoveo*, *stimulo*, but by succeeding authors it was exclusively applied to the active matter which subsides from the juice of the wild cucumber, either on account of its purgative properties, or because its capsule, when ripe, suddenly bursts with violence, and emits its contents to a considerable distance Hence, also, its name "Squirting Cucumber."

Qualities and Chemical Properties.—According to Lewis, all the parts of this plant are purgative; an opinion, which he appears to have borrowed from Geoffroy, who says,

" radicum vis cathartica major est quam *foliorum*; minor vero quam *fructuum*." Lewis observes further, that in Holland, an extract from the root in wine, is exhibited for the elaterium, and found equally efficacious. M. M. Coste and Willemet, also recommend the root to be given in doses of from fifteen to thirty grains; but the conflicting accounts respecting the effects of the substance improperly termed "*extractum elaterii*," (for it is not an extract, either in the chemical or pharmaceutical acceptation of the term, nor an inspissated juice, nor is it a fecula,) and the uncertainty with which different samples are administered, induced Dr. Clutterbuck to institute a series of experiments, from which it appears,

" That the most active principle belonging to this plant, is neither lodged in the *roots*, *leaves*, *flowers*, nor *stalks*, in any considerable quantity; nor is it to be found in the *body* of the fruit itself, nor in the *seeds* contained within it; *it was only in the juice around the seeds, therefore, that it could be looked for; and here it will be found, as is evident from the following trials.*

" This juice, as it first issues, without pressure, appears perfectly limpid and colourless. After it has stood for a short time, it becomes turbid; and after some hours it slowly deposits a sediment, which, being collected and gently dried, without much exposure to light, is of a yellowish white colour, slightly tinged with *green*. When dried, it is very light and pulverulent. This is the real *elaterium*, and it is extremely active as a medicine; an *eighth* part of a grain seldom failing to purge violently, and often with vomiting previously. The quantity contained in the cucumber is exceedingly small. From forty cucumbers I obtained only six grains; so that a single cucumber contains about an ordinary dose. Half a bushel, charged at half a guinea in the market, furnished less than two drams of elaterium; hence we cannot wonder at the high price it bears in the shops. This, however, is unnecessarily enhanced by the mode of preparation, and its not being known distinctly in what part the active principle is lodged.

" The juice, after the elaterium had subsided, was evaporated to an extract. Two grains of this were given in *six* cases. In *two* of them it produced several stools; *one* was vomited, and was purged on the following day; *one* was vomited in half an hour without purging; and in *two* it appeared to produce no effect.

" I gave five grains of a similar preparation, obtained from Apothecaries' Hall, in *fourteen* instances. In *seven* of them it produced no effect; in *three* it appeared to operate gently by stool. Of the others there was no report.

" It appears from hence, that the juice, after the fecula, or *elaterium* has subsided, contains but very little of the active principle; and *that*, probably, from the fecula having imperfectly subsided.

" With regard to the *sensible* and *chemical* properties of the fecula,

which subside spontaneously from the juice contained within the cucumber, as above described, and which alone appears to be the true elaterium, I have already observed that it is a light, pulverulent substance, of a very pale green colour, approaching to yellowish white. To the *taste* it is acrid and bitterish. The juice itself, as it escapes from the cucumber, readily inflames the skin of the fingers; and on getting accidentally into the eye in one instance, it occasioned severe pain and inflammation, with an erysipelatous swelling of the eyelids, that continued till the following day. The fecula, in the dose of one-eighth of a grain, seldom failed to produce both vomiting and purging, and that often violently. Half this quantity, viz. one-sixteenth of a grain, generally excited considerable purging. From several trials I have made, it appears to operate in little more than half the dose of that obtained from Apothecaries' Hall; which, however, is far more efficacious than what is generally sold in the shops, the quality of which varies extremely. *Some* specimens have acted very well in half grain doses; *others* have produced no effect in the dose of two grains. These are either improperly prepared, or are greatly adulterated. The best and most active I have seen, was some which I obtained from Mr. Parrott, of Mitcham, who for several years raised the plant in his own garden, and prepared the elaterium in large quantity for the Apothecaries' Company.

"Much of this medicine, as it is ordinarily met with in the shops, is of a dark green colour, approaching to black: it is likewise compact and heavy, and breaks with a shining resinous fracture. This is usually prepared by strong pressure of the cucumber, and consists, of course, in great part, of the ordinary juices, as well as the elaterium. It is very uncertain in its operation, and very weak, in comparison with that which has been properly prepared. The quantity is much increased by this mode of preparation; and hence it is sold at a much lower rate. The difference in price of this drug is extreme; the Apothecaries' Company charging sometimes as much as twelve shillings a dram, while it is sold at Corbyn's and some other shops, at four shillings. The quality, indeed, is superior at the Hall; but in no degree proportioned to the price. Yet I do not believe that either obtains an exorbitant profit; the difference arising chiefly from the mode of preparation, which, by the Apothecaries' Company, who adhere rigidly to the directions of the Pharmacopœia, is extremely wasteful, as I have satisfied myself by inspection.

"With respect to the *chemical* properties of this substance, I shall enter no further into these, than is connected with the purposes of pharmacy.

"*Water*, whether *hot* or *cold*, appears to have no action on pure elaterium. An infusion of eight grains, when filtered, produced no effect. Its insolubility in water, indeed, might be inferred from its spontaneous subsidence in the fluid: yet it is said, by Dr. Woodville, in his 'Medical Botany,' to be soluble both in spirit and in water. What it is that keeps the elaterium in a state of solution in the juice as first discharged, [illegible]

For this problem, Dr. Thompson proposes the following solution. He says, "The insolubility of elatin in water

a query:—What keeps it in solution in the juice of the fruit? Were I to suggest an opinion, it would be, that elatin does not exist completely formed in the fruit; the fecula, which subsides when the juice runs out, is in part the consequence of an oxidizement of it; for it becomes turbid soon after it is exposed to the air; and it loses much of its activity, or rather it does not become so active, when it is dried in a bright sunshine, as when it is dried in the shade. Now we know that light abstracts oxygen from substances containing it; as for instance, from metallic oxides, which are partially reduced by exposure to light; and we may thence infer, that substances, which would attract and combine with oxygen in the shade, may be prevented doing so in a bright light; and, therefore, in this case, owing to the superior attraction of light for oxygen, the fecula may be prevented from acquiring its due share of oxygen; and, consequently, from acquiring the peculiar state requisite for exerting its energy on the system.

"The *elaterium* procured from the spontaneous subsidence of the juice, without expression, and which may be considered as in a state of purity, dissolves almost entirely in alcohol. Of the best specimens from the Hall, spirit dissolves more than a half; while of inferior sorts, a *fourth* part is thus dissolved. The residue, after repeated affusions of spirit, is quite inert as a medicine. The active principle therefore may be considered as of a *resinous* nature; by which I only mean, however, that it is soluble in alcohol, which it tinges of a pale green colour. When the spirit is slowly evaporated, a resinous looking extract is obtained, which is very inflammable, and which is extremely active as a medicine; the *sixteenth* part of a grain generally producing considerable purging, and often vomiting. When the dose was increased to one-fourth of a grain, the effect was more considerable, and often took place in a very few minutes."

The foregoing details were communicated to the president of the College of Physicians, who requested Dr. Paris to report upon them. He accordingly, in conjunction with Mr. Farraday, entered upon a new series of experiments; "the results of which will show, that although Dr. Clutterbuck found that an *eighth* part of a grain of elaterium seldom failed to purge violently, yet strange as it may appear, that not more than one grain in ten of elaterium, as it occurs in commerce, possesses any active properties, and that this decimal part is a vege-

table proximate principle, not hitherto noticed," to which Dr. Paris gives the name of *Elatin*. A full detail of these experiments has been published by this gentleman,* and he expresses the chemical composition of elaterium in the following manner:

Water	·4
Extractive	2·6
Fecula	2·8
Gluten	·5
Woody matter	2·5
Elatin and Bitter principle . . .	1·2
	10 grains.

Dr. Paris further remarks,

"That the whole of the *elatin* does not separate itself from its native juice by spontaneous subsidence, and that, on this account, the supernatant liquor possesses some powers as a cathartic. We cannot be surprised, therefore, that the elaterium of commerce should be a very variable and uncertain medicine: for independently of the great temptation which its high price holds out for adulterating it, which is frequently done with starch, it necessarily follows, that where the active principle of a compound bears so small a proportion to its bulk, it is liable to be affected by the slightest variation in the process for its preparation, and even by the temperature of the season; where pressure is used for obtaining the juices, a greater or less quantity of the inactive parts of the cucumber will be mixed with the *elatin*, in proportion to the extent of such pressure, and the elaterium will, of course, be proportionally weak. There is one curious result obtained in my experiments which deserves notice, *viz.* that there is a bitter principle in the elaterium, very distinct from its extractive matter, and totally unconnected with its activity, for I diluted the solution obtained in experiment G, and swallowed it, but it produced upon me no effect, except that which I generally experience upon taking a powerful bitter—an increased appetite: and yet notwithstanding this fact, when in combination with *elatin*, it is far from being inert, since this body is considerably quickened by its presence."

Mr. Barry has made some trials on the elaterium prepared according to the process of Dr. Clutterbuck, and found that out of ten grains of the first sample, 5·5 were soluble in spirit of the specific gravity of 809; of the second 6·2; and of the third 6.4; of that prepared by the same process at Apothecaries' Hall, six

* Vide Pharmacologia, edit. 6th, fol. 226.

grains were soluble. The residue, insoluble in the spirit, was administered to a patient, and ascertained to be perfectly inert.

" Mention is made, by Bergius, of *two* kinds of elaterium, the *white* and the *black*. The *white* is prepared from the juice that flows without pressure from the fruit simply cut open. The juice is suffered to form a deposit, which is dried by the heat of the sun. It seems to be the precise substance which I have described above. *Bergius* says it is dissolved by digestion in water, but this appears to be a mistake.

" The *black* elaterium is prepared from the expressed juice of the cucumber altogether, and of course contains a great deal of extractive and colouring matter along with the real elaterium. This black preparation, instead of being light and pulverulent, is said to be heavy and glutinous when masticated, and sticks to the teeth; it is irritating to the fauces. It dissolves in considerable proportion in *water*, but only partially in *spirit*. It is also deliquescent in some degree. The white is more *resinous*, the black *gummy*, in its properties.

" The mode of preparing the elaterium in different pharmacopœias is far from uniform, and the medicine varies accordingly, independent of adulteration. According as more or less *pressure* is used, the medicine will approach to the *black* or *white* species, described above. It appears, from the account I have given, that pressure is not at all necessary in order to obtain the elaterium, and can only serve to deteriorate its quality, and render the dose uncertain. It is in this way that I account for the large doses prescribed by some writers, without any caution. Sydenham recommends two grain doses without reserve; and Woodville extends the dose from half a grain to three grains. These quantities, where the medicine is in the most active form, would, I think, be often attended with danger.

" The method recommended by the London College, and which is strictly followed at Apothecaries' Hall, is the least objectionable, as it directs only the slightest pressure to be made use of. It is, however, liable to objections in other respects, from it not having been known that the elaterium resides *exclusively* in the juice lodged in the hollow of the cucumber. Hence this has been often wasted and lost. Another source of waste, and that to a great amount, is the bursting of many of the cucumbers during their removal from the country.

" I have obtained the greatest quantity of the medicine by the following method:—

" The cucumbers should be gathered when nearly as ripe as possible, and without violence, that might endanger their bursting.* They should then be wetted by the affusion of cold water, that less of the juice when they are cut may adhere to the external surface. In this state they should be cut through longitudinally, and the juice allowed to strain through a fine sieve, placed in a large earthenware vessel. The seeds

* The Dublin College directs them to be gathered *before* they are ripe; by this means the chance of bursting is avoided; but it is a question whether the medicine is equally active as at a later period.

and surrounding pulp should be scooped out upon the sieve, and washed with repeated effusions of cold water, by which they will be freed from all adhering juice. Something will be saved also by afterwards rinsing the split cucumbers themselves in cold water, from which a portion of elaterium may be collected.

"After standing a few hours, a sediment is formed from which the clear liquor is to be poured off; it is then to be thinly spread on fine linen, and exposed to the air to dry: a gentle warmth may be employed without injury; but the access of sunshine destroys the fine green colour which the substance otherwise acquires."—(*Clutterbuck.*)

Since the foregoing experiments were tried by Drs. Clutterbuck, Paris, and Faraday, a further series of investigations have been made by Mr. Hennell, of Apothecaries' Hall, and Dr. Morries, of Edinburgh. From the researches of these gentlemen, carried on wholly independently of each other, it appears, that even the *Elatin* of Drs. Paris and Faraday is not a simple proximate principle, but a compound body, consisting of the true active ingredient now named *Elaterine*, mixed with a green resin like matter, similar to chlorophylle, or the colouring matter of leaves.

"Elaterine may be procured by evaporating the alcoholic infusion of Elaterium to the consistence of thin oil, and throwing it into boiling distilled water; upon which a white crystalline precipitate is formed, and more falls down as the water cools. This precipitate, when purified by a second solution in alcohol, and precipitation by water, is pure Elaterine. In mass it has a milky appearance. The crystals are microscopic rhombic prisms, striated on the sides. It is intensely bitter. It does not dissolve in the alkalis nor in water, is sparingly soluble in diluted acids, but easily soluble in alcohol, ether, and fixed oil. It has not any alkaline reaction on litmus. This substance, it is very evident, from the above condensed account, is a very different body from the *Elatin* previously mentioned."*

Elaterine, as it has been named by Dr. Morries, or, *Elateria* as it has been called by Mr. Hennell, may be procured from the Elatin of Drs. Paris and Faraday, by "acting on that compound body by ether, when a substance is left which is soluble in alcohol; and, which, on leaving the tincture at rest to spontaneous evaporation, crystallizes in acicular tufts. These crystals are

* Vide Christison, p. 525; Dr. Morries' Essay in the Edinburgh Medical and Surgical Journal, xxxv. 339, and Mr. Hennell's paper in the Journal of the Royal Institution, i. 502.

nearly colourless, they are scarcely soluble in water, and the undiluted acids. They do not form neutral salts with acids. They consist of seventeen parts of carbon, eighteen of oxygen, and eleven of hydrogen."

"The activity of Elatin as a cathartic, is (continues Dr. Thompson) almost incredible; it operates violently when only one minim of an alcoholic tincture, consisting of one grain of *Elateria* dissolved in ninety-six minims of strong alchohol, is administered. Hence it operates in doses of less than the 96th part of a grain. This extreme activity has hitherto prevented this principle being employed medicinally in its pure state, as a cathartic, even in the alcoholic solution."

Poisonous Effects.—Elaterium very much resembles the Helleborus *niger* in its effects, and when taken in over doses, produces hypercatharsis, vomitings, pain in the bowels, increased heat of skin, and all the usual symptoms attendant on inflammation of the abdominal viscera. Orfila ascertained by experiments on dogs, that the mucous membrane of the stomach was of a fiery red throughout, and although the intestines exhibited no traces of inflammation, the interior of the rectum was generally covered with rose-coloured spots.

From the experiments referred to, he infers,

"1st. That the first effects of elaterium are dependent on the inflammation it produces, as much as on its absorption.

"2nd. That death, which is the consequence of the administration or application of this substance, must be attributed to the lesion of the nervous system sympathetically affected.

"3rd. That besides, it exerts a special action upon the rectum."

"Elaterine is a poison of very great activity. A tenth of a grain, as I have myself witnessed, will sometimes cause purging in man; and a fifth of a grain in two doses administered at an interval of twenty-four hours to a rabbit, killed it seventeen hours after the second dose. The best British Elaterium contains 26 per cent. of this active principle, the worst 15 per cent.; but French Elaterium does not contain above 5 or 6 per cent." These facts, as Dr. Christison continues, sufficiently account for the great irregularity in the effects of the ordinary drug, as a cathartic.

Treatment.—See *Helleborus niger* (Art XI.)

Medical Properties and Uses.—We presume, that after

the excellent account of the properties of Elaterium by Dr. Clutterbuck becomes known to our readers, they will not employ any of that substance unless it be prepared according to his directions. It will then be found a good cathartic in obstinate constipations; and as a hydragogue in dropsy, it is not excelled. Dr. Clutterbuck* has not found any single medicine equally efficacious in checking the course of fever; with which view he generally employs an *eighth* or a *quarter* of a grain, two or three times in the twenty-four hours; and that for several days. In this quantity, it generally answers the double purpose of exciting vomiting and purging at the same time; and these evacuations are rendered more effectual in cutting short the fever, by previous bloodletting. Mr. Sprague recommends the following pill-mass as the best form of giving Elaterium as a cathartic:

℞ Elaterii extracti (Dr. Clutterbuck's) gr. xv.
Potassæ Sulphatis ℈j.
Saponis Duri ʒj.
Zingiberis Rad. Pulv. ʒiss.

Potassæ sulphatem et elaterium simul tere, dein cum zingibere et postea cum sapone contunde, et adde aquæ quantum sufficit, ut fiat massa; in pilulas sexaginta dividenda. Dosis i. ad ij. omni hora donec plene solutus sit alvus.

Two grains of elaterium rubbed up with eight grains of hard soap, present a combination for a suppository, that may be advantageously administered in apoplexy. Elaterium appears to have been formerly used in practice, and Simon Pauli recommends it when milder means have failed. "Lister and Hoffman both assert, that it produces often great heat and pulsation at the very extremities of the fingers;" and it sometimes affects the head. Sydenham and his cotemporaries used it for dropsy, but in consequence of its violent effects, arising from injudicious management, it fell into disrepute, till it was successfully used for the cure of hydrothorax, by Dr. Ferriar, of Manchester. It was once esteemed as an errhine.

Off. Prep.—Extractum Elateri. *L. E. D.*

* Vide Observations on Epidemic Fever, p. 118. By H. Clutterbuck, M.D.

Œnanthe crocata.

ŒNANTHE CROCATA.

Hemlock Water-dropwort.

Class V. PENTANDRIA.—*Order* II. DIGYNIA.

Nat. Ord. UMBELLATÆ, *Lin.* UMBELLIFERÆ, *Juss.*

GEN. CHAR. *Calyx* 5-dentate; *petals* 5 obcordate, with inflexed points. *Fruit* tapering, crowned by the erect styles. *Carpels* with 5-blunt convex costæ, the lateral ones being broadest and marginal. *Vallecules*, with single vittæ. *Involucre* various; *involucels* many-leaved.

SPEC. CHAR. *Leaflets* all wedge-shaped, many cleft, nearly equal. *Fruit* linear-oblong, with slender costæ, involucrum few-leaved.

Syn.—Œnanthe cicutæ facie Lobelii, *Raii Syn.* 210. 3; *Park.* 894.
Œnanthe tertia, *Matth. Valgr. v.* 2. 220. *f.*
Filipendula cicutæ facie, *Ger. Em.* 1059 *f.*
Œnanthe crocata, *Lin. Sp. Pl.* 365; *Willd. v.* 1. 1441; *Fl. Brit.* 319. *Eng. Bot. v.* 33. *t.* 2313. *Hook. Scot.* 92; *Woodv. v.* iv. *t.* 267; *Stokes Bot. Mat. Med. v.* 2. 114.
PROVINCIALLY.—*Hemlock Dropwort; Yellow Water-dropwort; Dead Tongue; Water Lovage.*
FOREIGN.—*Œnanthe*, Fr.; *Enante*, Ital.; *Filipendula*, Span.; *Rœhrige Rebendele*, Ger. *Druiveblosm*, Dutch; Vand-Steenbrek, Dan.

ŒNANTHE CROCATA is decidedly one of the most active of our poisonous vegetables. When received into the stomach in any considerable quantity, it produces very violent effects on the nervous system, which speedily prove fatal. It is a tall umbelliferous plant, somewhat resembling Smallage, or Wild Celery, for which it has sometimes been mistaken. It is found growing on the sides of ditches, and on the borders of lakes and rivers, in many parts of Britain; flowering in July. It is particularly

abundant on the banks of the Thames between Greenwich and Woolwich among the reeds, growing with *Apium graveolens*, and some other aquatics; about the Red-House, Battersea; in the Isle of Dogs, and other places near London. Dr. Milne found it in the marshes about Tunbridge; by the side of the Lewisham river, beyond the water-works; in the marshy meadows between South-end and Sydenham; and betwixt Loom-pit hill and Lewisham, on the left-hand in going from New-cross, near the bridge. It is very common in some of the northern counties, and we learn from Dr. Greville, in his "*Flora Edinensis*," that it grows on the bank of a river at the beautiful village Lasswade, near Edinburgh.

The root is thick, white, fleshy, and divided into three or four small ramifications, somewhat resembling the common parsnip, for which it has sometimes been mistaken. The stem, which as well as the root contains a fœtid, orange-coloured juice, is round, furrowed, hollow, much branched, and rises to the height of three or four feet. The form and colour of the leaves, and indeed the general appearance and habit of the plant, have a striking resemblance to the common garden parsley. The leaves are large, tri-quadri-pinnate, smooth, of a deep green, with the leaflets wedge-shaped, mostly opposite, veined, irregularly cut, and sessile, or placed on very short stalks. The general umbels are large, terminal, many-rayed; the partial ones more numerous, and very short: the general, as well as partial involucres consist of many leaves, varying in number and form. The flowers are white, or pinkish, obcordate, numerous, slightly radiating; the outermost irregular and abortive, the innermost smaller, regular, and prolific: the filaments are thread-shaped, longer than the corolla, with roundish anthers: the germen is ovate, with a slender awl-shaped style, supporting a small obtuse stigma. The fruit is oblong, with five convex ridges, and crowned with the permanent limb of the calyx, and elongated spreading styles.—Fig. (*a*) represents a floret of the circumference; (*b*) a floret of the disc.

The scientific name *Œnanthe*, occurs in Theophrastus and Dioscorides, and is derived from *οινη, the vine*, and *ανθος, a*

flower. Tournefort first applied it to the present genus, because it blossoms at the same time as the vine, and because the flowers reminded him of the smell and colour of that plant. The trivial name *crocata* was given in consequence of the yellow juice which it yields.

Wepfer has confounded this plant with his *Cicuta aquatica*, and complains that Lobel has described the *Cicuta aquatica* under the name of *Œnanthe Cicutæ facie, succo viroso croceo*, nine years afterwards. In the *Ephemerides Naturæ Curiosorum*, he also asserts that *Stalpart Van Der Wiel* makes the same mistake; although from the descriptions of Lobel, whichwer e very exact for the times he lived in, and from the plates of Stalpart, it is very evident that they were right. Hoffman also, in his *Medicin. Rational. Systematic.* tom. ii. p. 174. *edit.* 4to. makes no mention of the difference. His words are, "Ex vegetabilium regno inter præsentissima venena referri debeat cicuta vera, napellus sive aconitum cæruleum, solanum furiosum, hyosciamus, ac datura."

We have already observed, that both the colour and form of the leaves have a striking resemblance to parsley, and Johnson asserts, that either from ignorance, or a less excusable cause, the roots were in his time frequently sold for those of pœony; and that the women likewise, who supply the apothecaries with herbs, vended this pernicious root under the name of Water Lovage. A man has lately been imposing on the inhabitants in the vicinity of town, by selling the roots for those of the beautiful Dahlia.

Qualities.—The root, in which the deleterious quality is most powerfully resident, contains a juice that is at first milky, and afterwards becomes yellow. It has an acrid, unpleasant taste, and fœtid smell. The other parts of the plant also yield the same kind of juice; and Mr. Erhert, a botanical artist, asserted, that while drawing the plant, the smell from it rendered him so giddy, that he was several times obliged to quit the room, and walk in the air to recover himself; but that having opened the door and windows of the room, the free air enabled him to finish his work.

Poisonous Effects.—The Œnanthe Crocata appears to be the most virulent of the umbelliferous plants: for if admitted into the stomach in but a small quantity, it is instantly productive of the most violent effects: such as convulsions, frequent hiccough, ineffectual retchings, hæmorrhage from the ears, and other violent symptoms which terminate in death: and it is very evident, from the subjoined accounts, that "it exerts an energetic local irritation, and acts powerfully on the nervous system."

"Eight young lads going a fishing to a brook near Clonmell, in Ireland, meeting with a parcel of Hemlock Dropwort, and mistaking their roots for those of Water Parsnep, ate a quantity of them. About four or five hours after, going home, the eldest, who was almost of man's stature, without the least previous disorder, on a sudden fell down backwards, and lay sprawling upon the ground. His countenance soon turned very ghastly, and he foamed at the mouth. Soon after, four more were seized in the same manner; and they all died before morning. Of the other three, one became mad, but recovered his senses next day. Another lost his hair and nails; and the third escaped without receiving any harm—which perhaps might be occasioned by his speedy running two miles after he saw the first young man fall, together with his drinking a very large draught of milk warm from the cow, in the midway." *

"M. Charles was called in to attend a whole family who had eaten of the roots of Œnanthe. Momentary sensations of an acrid heat, determining to the head; a pungent burning in the epigastric region, and small rose-coloured spots of an irregular shape, extending successively; such were the symptoms produced by the poison. These spots, which did not exceed the level of the skin, first made their appearance on the face, then on the breast, and on the arms; the father alone had the belly swelled out like a balloon. Mucilaginous, and oily medicines, with milk, were successfully administered to them." †

"Three French prisoners being in the fields near the town of Pembroke, dug up a large quantity of a plant (which they took to be *wild celery*) to eat with their bread and butter, for dinner. After washing it, while yet in the fields, they all three ate, or rather only tasted, of the roots.

"As they were entering the town, one of them was seized with convulsions. The other two ran and sent a surgeon, who endeavoured first to bleed, and then vomit him, but in vain; and he died presently. Ignorant of the cause of their comrade's death, and of their own danger, they gave of these roots to eight other prisoners, who all ate some of them with their dinner. A few minutes after, the two who gathered the plants were seized in the same manner as the first, of whom one died. The other was bled, and an emetic with great difficulty forced down, on ac-

* Lowthorp's Phil. Transac. abridged, vol. ii. page 641.
† Annales Chimiques de Montpellier, No. 134.

count of his jaws being set. This operating he recovered; but was some time much affected with dizziness in his head, though not sick, nor in the least disordered in his stomach. The other eight being bled, and vomited immediately, were soon well.

"What they ate was *Œ. Aquatica cicutæ facie* of Lobelius, which growns in plenty all over this country, and is called by the inhabitants, five-fingered root, and is much used by them for cataplasms for the felon, or worst kind of whitlow. They ate only the root, and none of the leaves or stalk."—*Gentleman's Mag.* 1747, p. 321.

"Stalpart Van Der Weil, in his Observations, takes notice of the deadly effects to two persons, who had eaten these roots, mistaking them for Macedonian parsley. Soon after eating the roots, they were troubled with violent heats in the throat and stomach, and purging. One of them bled at the nose; the other was violently convulsed. Both of them died; one in two hours, the other in three."

"The dead bodies of three unfortunate Belgians, belonging to the 82nd Demi-brigade, were brought to the principal naval hospital at Brest. They had been deceived by the resemblance which the root of *Œnanthe crocata* bore to one made use of in their own country, and ate a great quantity of it. Its sweetish flavour pleased their palates, and contributed to the keeping up of their error. They very soon experienced a general uneasiness, nausea, vertigoes, and vomitings. To these symptoms succeeded convulsions, and with such rapidity, that they sunk under them in less than half an hour, and before any assistance was given."

Morbid Appearances of these Men.—Nothing remarkable on the exterior surface of the body. One of these bodies was preserved for four days, and at the end of that time no sign of putrefaction was observed: the brain and its membranes were sound, the lungs distended; their vessels full of black and dissolved blood. In the bronchiæ, trachea, and mouth, was found a frothy and whitish fluid. The lungs in one of these bodies presented on their external surface some petechiæ; the cavities of the two circulatory systems empty; the heart sound. The stomach contracted, and inflamed at its extremity (pyloric?) and lesser curvature; its coats thickened; the intestines puffed up, and their vessels injected; the venous and arterial systems distended with a fluid of the same nature, dissolved and blackish: the derangements were precisely the same in all three.*

Further accounts of this dreadful poison may be found in Vanderwiel's *Observationum Pariorum, &c. tom.* 1, *p.* 182. In the *Philosophical Transactions, p.* 836, *Anno* 1758. In Dr. Allan's *Synopsis Medicinæ;* and Boerhaave's *Historia Plantarum; Lug. Bat. p.* 79.

Treatment.—See article *Helleborus niger*, No. XI.

Uses.—Few practitioners now venture to prescribe this plant; but it is said that an infusion of the leaves, or three tea-

* Duval's Dissertation Inaugurale.

spoonsful of the juice have been successfully administered for some obstinate cutaneous diseases, particularly lepra and ichthyosis. Dr. Hope, the father of the present able Professor of Chemistry in the University of Edinburgh, found an infusion of the leaves highly useful in promoting the menstrual discharge. In Westmoreland, the country people apply a cataplasm of the herb to the ulcer which forms in the fore part of the hoof in horned cattle, and is called "*foul.*" It sometimes proves diuretic; but its real powers as a remedial agent, are as yet imperfectly understood.

We learn from Sir James Edward Smith, in his "*English Flora,*" on the authority of Sir Thomas Frankland, that brood-mares sometimes eat the root, and are poisoned by it.

XXXVI

GEUM URBANUM.

Avens, or Herb Bennet.

Class XII. ICOSANDRIA.—*Order* VIII. POLYGYNIA.

Nat. Ord. SENTICOSÆ, *Lin.* ROSACEÆ, *Juss. De Cand.* ROSINÆ, ROSACEÆ, *Burn.*

GEN. CHAR. *Calyx* 10-cleft, inferior. Alternate segments, minute. *Corolla* 5-petalled. *Pericarps* with bent awns. *Receptacle* elongated.

SPEC. CHAR. *Flowers* nearly erect; awns naked. Cauline *Leaves* ternate; radical ones lyrato-pinnate.

Syn.—Caryophyllata, *Raii. Syn.* 253, 1; *Ger. Em.* 994. *f.*; *Matth. Valgr. v.* 2.

Caryophyllata vulgaris majore flore, *Park.* 136; *Bauh. Pin.* 321.

Geum, *v.* 1130, *Hall. Hist. v.* 2. 52.

Geum urbanum, *Lin. Sp. Pl.* 716; *Willd. v.* 2. 1113; *Fl. Brit.* 554; *Curt. Lond. fasc.* 2. *t.* 36. *Stokes, v.* 3. 156. *Woodv. Sup.* 259.

FOREIGN.—*Benoite officinale*, Fr.; *Cariofilata*, Ital.; *Islera*, Span.; *Cravoilha*, Port.; *Nelkenwurzel*, Ger.; *Gemeen nagel-wortel*, Dutch; *Grebnick*, Russ.; *Zarzyczka*, Pol.; *Nellikerod*, Dan.

THIS is a common perennial plant, growing wild in woods, and shady places, in many parts of Great Britain; and it occurs also in similar situations throughout Europe, as far north as Sweden. It is found in flower the greatest part of the summer, and is figured in "English Botany," *v.* 20. *t.* 1400.

The root is woody, and fibrous. The stem is erect, two feet round, branched towards the top, rough, and covered with minute hairs. The lower leaves are on long channelled foot-stalks, interruptedly pinnate, and lyrate, with the terminal leaflet very large, rounded, and often three-lobed; the upper or cauline ones are sessile, simple, wedge-shaped and trifid; the whole irregularly notched, serrated, hairy, and of a deep green colour. The flowers are terminal, solitary, erect of somewhat drooping, and stand on long foot-stalks. The calyx is inferior, of one leaf, permanent, and divided into

ten acute segments, five alternate ones of which are smaller. The petals are bright yellow, roundish, and attached by their claws to the rim of the calyx; the filaments are awl-shaped, shorter than the corolla, and supporting yellow anthers; the germens are ovate, compressed, and collected into a round head; the styles jointed above the middle, with simple stigmas. The pericarps form a round orbicular head; they are numerous, ovate, downy, and each tipped with a long rigid purple awn, terminating in a small sharp hook.—Fig. (*a*) represents the pistils; (*b*) a portion of the calyx showing the situation of the filaments and anthers; (*c*) a section showing the receptacle, and pericarps with their hooked awns.

Qualities.—The root of Avens has a gently austere taste, and a fragrant odour. On distillation with water it yields a small portion of an agreeable volatile oil. The infusion strikes a deep black colour with the salts of iron, and gives a copious precipitate with gelatin.

The clove-like aroma which characterizes the root of Geum urbanum has obtained for it the name Caryophyllata; and by the Italians it is commonly so called, (*Cariofilata.*) The aroma is greater in those plants which grow in dry situations, and is greatly deteriorated by damp shady habitats. Gathered in the spring, and put into ale, Avens gives the liquor a pleasant flavour, and, as Loudon says, prevents it turning sour. The root may be chewed, as the iris root frequently is, to overcome the disagreeable odour of the breath to which many persons are subject.

Medical Properties and Uses.—The effects of Geum urbanum, are those of a moderate astringent, antiseptic, and tonic. The root may be given with safety in all cases where we wish to restrain immoderate discharges, especially those from the bowels, when not attended with inflammatory action. It was formerly in much repute in diarrhœa and dysentery, and has of late years been strongly recommended by the continental physicians, especially in Germany, as a substitute for Peruvian bark in the cure of intermittent fevers. Although Avens has been seldom employed in practice in this country, it would seem to be possessed of very valuable properties, and being an indigenous vegetable, we can confidently recommend it to the attention of the profession for further, and more extensive trials. The decoction, made by boiling one ounce of the roots in a pint of water, for ten minutes, is the usual mode of exhibiting it. Of this one or two ounces may be given every hour. The dose in substance is from half a drachm to a drachm.

XXXVII

NICOTIANA TABACUM.

Virginian Tobacco.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. LURIDÆ, *Lin.* SOLANEÆ, *Juss. De Cand. &c.* SOLANACEÆ, *Bartl. Burn. &c.*

GEN. CHAR. *Corolla* funnel-shaped, with the border plaited. *Stamens* inclined. *Stigma* emarginate. *Capsules* 2-valved, 2-celled.

SPEC. Char. *Leaves* lanceolate, ovate, sessile, the lower decurrent. *Segments* of the *Corolla* acute; mouth inflated.

Syn.—Tobacco latifolium, *Park.* 363. *t.* 361. *f.* 8; *Raii Hist.* 713.
Hyoscyamus peruvianus, *Ger. Em.* 357.
Petum latifolium, *Clus. Exot.* 309.
Herba sancta indorum, sive Nicotiana gallorum, *Lobel Advers* 251.
Nicotiana, sive Tabacum majus, *Bauh. Hist.* 3. 629.
Βλεννοχοις, *Renealm. Spec.* 38. *t.* 87.
Nicotiana Tabacum, *Lin. Sp. Pl.* 258; *Willd.* 1. 1014; *Woodv.* 162. *t.* 60; *Stokes*, 1. 390; *Hort. Kew.* 1. 241.
FOREIGN.—*Tabac*, Fr; *Tabaco*, Sp.; *Tabacco*, Ital.; *Tabak*, Ger.; *Bujjirbhong*, Arab. *Tambácu*, Hind.; *Tabac*, Russ and Polish; *Petume*, Brazil.

THE Nicotiana Tabacum, or Virginian Tobacco, is an annual plant, a native of America. It is the species chiefly imported into this country as a luxury, and appears to have been introduced since the middle of the sixteenth century. In its native soil the plant flowers in July, but with us it continues to blossom till the end of September.

Every part of the plant is downy, clammy, and fœtid. The stem is erect, round, branched towards the top, and rises to the

height of four or five feet. The leaves slightly resemble those of Fox-glove, and are numerous, alternate, sessile, oblong, pointed, entire, and of a dull green colour: those next the root are often two feet long, and four or five inches broad. The stem leaves are somewhat decurrent, and become smaller and narrower as they approach the summit. The flowers are produced in loose panicles, upon longish foot-stalks, and are furnished with long, linear-pointed bracteas: the calyx is bell-shaped, and divided into five acute pointed segments; the corolla is monopetalous, twice the length of the calyx, of a pale greenish colour, swelling into an oblong cup, which expands into five-pointed, plaited, rose-coloured segments: the filaments are the length of the corolla, and surmounted by oblong compressed anthers: the germen is oval, and supports a long slender style, terminated by a roundish bilobed stigma. To the flower succeeds an ovate capsule, containing many small kidney-shaped seeds, and bursting at the apex. Fig. (*a*) represents the stamens, showing their insertion into the tube of the corolla; (*b*) the germen and pistil; (*c*) the capsule; (*d*) a longitudinal, and (*e*) a transverse section of the fruit showing the placentation of the seeds.

The *generic* term "Nicotiana," was bestowed on this plant in honour to Jean Nicot, Ambassador of Francis II. in Portugal; who brought some Tobacco from Lisbon, and presented it to Catherine de Medicis, as a herb possessing valuable properties; hence also it has been termed *queen's herb*. By some persons, the name *Tobacco* is said to have been given to the plant by the Spaniards, who took it from Tobaco, a province of Yucatan, where they first found it, and learned its use; others derive it from the island of Tobago: but Humboldt asserts, that "the word tobacco, (*tabacco*,) like the words savannah, maize, cacique, maguey (agave) and manatee, belongs to the ancient language of Hayti, or Saint Domingo; and that it does not properly denote the herb, but the tube through which the smoke is inhaled."

A very general opinion prevails, that the plant was either brought from Virginia, or from South America; Humboldt expressly contradicts this, and confirms the previous statement, that Europe received the first Tobacco-seeds from Yucatan,

about the year 1559; and we gather from his learned work, that the cultivation of this narcotic plant preceded the cultivation of the potatoe in Europe, more than 120 or 140 years. When Raleigh brought Tobacco from Virginia to England, in 1586, whole fields of it were already cultivated in Portugal; and so quickly did the practice of smoking spread, that at the end of the sixteenth century, bitter complaints were made in England of this imitation of the manners of a savage people—"Ex illo sane tempore (tabacum) usu cepit esse creberrimo in Anglia, et magno pretio dum quamplurimi graveolentem illius fumum per tubulum testaceum hauriunt et mox e naribus efflant, adeo ut Anglorum corpora in barbarorum naturam degenerasse videantur, quum iidem ac barbari delectentur." We may see from this passage from Camden, that they emitted the smoke through the nostrils.

In 1634, smoking was denounced in Russia, under the penalty of cutting off the nose; and twenty years afterwards, a council of one of the Swiss cantons, cited all smokers before them; and every innkeeper was ordered to inform against those who were found smoking in their houses.

In the laws of Bern, the importance attached to this custom was evident by the place which it held; the prohibition of smoking following the crime of adultery. The Turkish Sultan, Amurath the Fourth, rendered smoking Tobacco punishable with death, from an apprehension that it produced barrenness; and Urban VIII. anathematised those who used it in churches.

King James I. imbibed similar prejudices, and wrote a curious work, entitled "A Counterblaste to Tobacco;" from which we extract the following passage:

"Tobacco being a common herb, which (though under divers names) grows almost every where, was first found out by some of the barbarous Indians to be a preservative, or antidote, against a filthy disease, whereunto these barbarous people are (as all men know) very much subject, what through the uncleanly and adust constitution of their bodies, and what through the intemperate heat of their climate. So that, as from them was first brought into Christendom that most detestable disease, so from them likewise was brought this use of tobacco, as a stinking and unsavoury antidote for so corrupted and execrable a malady, the stinking suffumigation whereof they yet use against that disease, making so one canker or vermine to eat out another. And now, good countrymen, let us (I pray you) consider what

honour or policy can move us to imitate the barbarous and beastly manners of the wild, godless, and slavish *Indians*, especially in so vile and stinking a custome. Shall we, that disdain to imitate the manners of our neighbour *France*, (having the style of the great Christian kingdom,) and that cannot endure the spirit of the *Spaniards*, (their king being now comparable in largeness of dominions to the greatest emperor of Turkey;) shall we, I say, that have been so long civil and wealthy in peace, famous and invincible in war, fortunate in both; we that have been ever able to aid any of our neighbours; (but never deafened any of their ears with any of our supplications for assistance;) shall we, I say, without blushing, abase ourselves so far as to imitate these beastly *Indians*, slaves to the *Spaniards*, the refuse of the world, and as yet aliens from the holy covenant of God? Why do we not as well imitate them in walking naked as they do, in preferring glasses, feathers, and such toys, to gold and precious stones, as they do? Yea, why do we not deny God, and adore the devils as they do?"

The monarch, not content with writing against this favourite luxury, endeavoured to abolish its use by taxing it heavily; but finding that notwithstanding both his writings and prohibitions the demand for it increased, he commanded in 1619, that no planter in Virginia should cultivate more than 100 lbs.

It is supposed, that "the juice of cursed hebenon," by which according to Shakspeare, the king of Denmark was poisoned, was the essential oil of Tobacco:

> "Sleeping within mine orchard,
> My custom always of the afternoon,
> Upon my secure hour thy uncle stole,
> With juice of cursed hebenon in a vial,
> And in the porches of mine ears did pour
> The leperous *distilment*."

"The learned commentator, Dr. Gray, observes, that the word here used (hebenon), was more probably designated by a *metathesis*, either of the poet or transcriber, for *henebon*, i.e. henbane Now it appears, from Gerarde, that Tobacco was commonly called *henbane of Peru*, (Hyoscyamus Peruvianus;) and when we consider how high the prejudice of the court ran against this herb, as so strikingly evinced by the 'Counterblaste' of king James, it seems very likely that Shakspeare, who was fond of playing the courtier, should have celebrated it as an agent of extraordinary malignity upon such an occasion. No preparation of the hyoscyamus with which we are acquainted, would produce death by an application to the ear; whereas the essential oil of

Tobacco might, without doubt, occasion a fatal result."—*Paris Med. Jurisp.* p. 417. vol. ii.

Four species of Tobacco are cultivated in Europe, viz. N. *tabacum*; N. *rustica*; N. *paniculata*; and N. *glutinosa*. Humboldt found only the two latter growing wild; but the N. *loxensis*, and the N. *andicola*, which he discovered on the bank of the Andes, at 1850 toises of elevation, almost the height of the Peak of Teneriffe, are very similar to the N. *tabacum* and N. *rustica*. The whole genus is almost exclusively American, and the greater number of species appeared to him to belong to the mountainous and temperate regions of the tropics. When Sir W. Raleigh was confined in the Tower, he smoked the N.

Tobacco appears to thrive in nearly every part of the globe; being cultivated by the Ceylonese, the natives of the Cape of Good Hope, by the inbabitants of the West Indies, of the Levant, of the coasts of Greece and the Archipelago, &c.; but what is principally imported into this country, is derived from Maryland and Virginia. The latter being sweet-scented is generally preferred here.

Culture.—This plant was formerly cultivated in many parts of England, particularly in Yorkshire, and thrives remarkably well. Half a rood is still allowed to be grown for domestic use, but for the encouragement of the American colonies, any greater cultivation was prohibited: and although those colonies are now lost, the prohibitions still remain in force. Some hopes were however held out in a late session of Parliament, that the prohibitory enactments might be repealed: we therefore subjoin those methods of propagation and culture which have been recommended by J. C. Loudon, Esq. F.L.S. in his valuable, entertaining, and curious book, "The Encyclopædia of Agriculture."

"*The soil* for Tobacco must be deep, loamy, and rich; well pulverised before planting, and frequently stirred, and kept free from weeds, during the growth of the plants. The plants in this country should be raised in a warm part of the garden: the seed is very small, and should be sown and lightly covered, and then the surface pressed down with the back of the spade, in the middle of March. In May they will be fit to transplant, and should be placed in lines three feet apart every way. If no

rain fall, they should be watered two or three times. Every morning and evening, the plants must be looked over, in order to destroy a worm which sometimes invades the bud. When they are about four or five inches high, they are to be cleared from weeds, and moulded up. As soon as they have eight or nine leaves, and are ready to put forth a stalk, the top is nipped off, in order to make the leaves longer and thicker. After this, the buds which sprout at the joints of the leaves are all plucked, and not a day is suffered to pass without examining the leaves, to destroy a large caterpillar, which is sometimes very destructive to them.

"The following is the mode of *taking and fermenting* the leaves in America. When they are fit for cutting, which is to be known by the brittleness of the leaves, they are cut with a knife, close to the ground; and after lying some time, are carried to the drying-house or shed, where the plants are hung up by pairs upon lines, leaving a space between, that they may not touch one another: in this state they remain to sweat and dry. When perfectly dry, the leaves are stripped from the stalks, and made into small bundles, tied with one of the leaves. These bundles are laid in heaps, and covered with blankets. Care is taken not to overheat them, for which reason the heaps are laid open to the air from time to time, and spread abroad. This operation is repeated till no more heat is perceived in the heaps, and the Tobacco is then stowed away in casks for exportation. To *save seed*, allow one or two plants to run; they will flower and be very ornamental in June, July, and August; and ripen their seeds in September or October.

"In the *manufacture of Tobacco*, the leaves are first cleared of any earth, dirt, or decayed parts; next, they are gently moistened with salt and water, or water in which some salt, and sometimes other ingredients, have been dissolved, according to the taste of the fabricator; this liquor is called Tobacco sauce. The next operation is to remove the midrib of the leaf; then the leaves are mixed together, to render the quality of whatever may be the final manufacture or application equal. Next, they are cut into pieces with a fixed knife, and crisped or curled before a fire. The succeeding operation is to spin them into cords, or twist them into rolls, by winding them with a kind of mill round a stick. These operations are performed by the grower, and in this state (of rolls) the article is sent from America to other countries, where the tobacconists cut it into chaff-like shreds, by a machine like a straw-cutter, for smoking, form it into small cords for chewing, or dry, and grind it, for snuff. In manufacturing snuff, various matters are added to give it an agreeable scent, and hence the numerous varieties of snuff. The principal kinds are called Rappees, Scotch, or Spanish, and thirds. The first is only granulated; the second is reduced to a very fine powder; and the third is the siftings of the second sort.

"Writers on the diseases of artizans have made many vague statements on the supposed baneful effects of the manufacture of snuff on workmen. It is said they are liable to bronchitis, dysentery, ophthalmia, carbuncles, and furuncles. At a meeting of the Royal Medical Society of Paris, however, before which a memoir to this purport was lately read, the facts were contradicted by reference to the state of the workmen at the royal snuff manufactory of *Gros-Caiblou*, where a thousand people are constantly employed without detriment to health. This subject has

since been investigated with great care by MM. *Parent*, Duchatelet, and D'Arcel, who inquired minutely into the state of the workmen employed at all the great tobacco manufactories in France, comprising a population of above four thousand persons, and the results at which they arrived are—that the workmen very easily become habituated to the atmosphere of the manufactory; that they are not particularly subject either to special diseases or to diseases generally; and that they live on an average quite as long as other tradesmen. These facts are derived from very accurate statistical returns, showing the number of days each person is annually off work from sickness, the ages at which superannuated allowances have been granted, the period of death, and the prevalent diseases." — *Christison, Paris, and Fonblanque, Annales d'Hygeine publique, &c. &c. &c.*

Qualities and Chemical Properties.—The leaves of Tobacco are large, and of a dull green colour, which they retain when properly dried; their brown colour being produced purposely by the action of a little sulphate of iron. They have a fetid smell, and are extremely acrid, and bitter to the taste. They contain a quantity of nitre, and therefore deflagrate in burning. Mucilage, albumen, gluten, extractive, a bitter principle, and an essentiai oil, also enter into their composition. Vauquelin has also discovered a peculiar acrid principle which is volatile, and soluble both in water and alcohol, named *nicotin*. The following is the process by which it was first obtained:—Evaporate the expressed juice of fresh tobacco leaves to one-fourth its bulk, and when cold strain it through fine linen; evaporate the strained liquor nearly to dryness; digest the residue in alcohol; filter and evaporate to dryness; dissolve this again in alcohol, and again reduce it to a dry state. Dissolve the residue in water, and saturate the acid it contains with a weak solution of potassa; introduce the whole into a retort and distil to dryness; re-dissolve and again distil three or four times successively; the nicotin will thus pass into the receiver, dissolved in water, from which solution it may be obtained by very gradual evaporation.—*Ann. de Chim.* lxxi. Nicotin is colourless, has an acrid taste, and the peculiar smell which is characteristic of Tobacco; it occasions violent sneezing; and is precipitated from its solutions by tincture of galls, which will also throw it down from the infusion of the leaves. Tobacco yields its active matter to water and alcohol, but decoction impairs its

activity. The essential oil which may be collected by distilling the tobacco leaves in water when it comes over as a greasy scum that floats on the water, is also formed whenever destructive distillation is performed; and hence it is produced in the ordinary process of smoking.

Poisonous Effects.—A young man residing in Leicester-Place, unaware of the serious consequences, infused about an ounce of Tobacco in a quart of coffee, that was standing in the pot for the use of the maid-servant, a girl eighteen years of age, and of robust health. Of this a large tea-cupful was hastily drank, which immediately produced the most depressing nausea, inefficient attempts to vomit, vertigo, tremors, a copious flow of urine, and the greatest depression of the vital powers that could be imagined. Under these circumstances, Mr. Churchill was sent for, and found her bathed in cold perspirations; the pupil was dilated; and the pulse so feeble as scarcely to be felt: she had lost the power of speaking. Frictions to the region of the heart were vigorously employed, and vomiting excited by large draughts of the carbonate of Ammonia, dissolved in water, and by the application of a feather to the fauces. These efforts were soon effectual in evacuating the stomach, but the general torpor of the system existed six hours, and she required constant attendance for that time, during which frictions were very generally employed: hot water was applied to the feet; and a stimulating purgative injection was most advantageously administered. When vomiting had been copiously excited, pills composed of the compound extract of colocynth, combined with capsicum, evacuated the intestines; after which, the girl quickly recovered, merely requiring some effervescing medicine, containing small doses of opium.

Some further cases we also extract from Harrison, Barrow, Orfila, and other writers, as illustrations of the poisonous qualities of this plant.

"When the evening was pretty far advanced, the master of a schooner conducted me to the cabin, which was almost full of large packages, and pointing out where I was to sleep, left me alone. I felt a heavy suffocating smell, but did not examine the contents of the bales, and immediately went to bed. Soon afterwards, I was harassed by wild and frightful dreams, and suddenly awakened about midnight, bathed in a cold dew, and totally unable to speak or move. However, I knew perfectly where I was, and recollected every thing that had occurred the preceding day; only I could not make any bodily effort whatever, and tried in vain to get up, or even to change my position. The watch on deck struck four bells, and I counted them, though it seemed to me that I did not hear the beats, but received the vibration through my body. About this time, a seaman came into the cabin with a light, and carried away an hour-glass that hung upon a nail, without observing me, though I made several efforts to attract his attention. Shortly after, a pane in the sky-light was broken by accident, and I saw the fragments of glass drop on the floor. These circumstances actually occurred, as I found on inquiry the next day; and I mention them to prove, that the sensations I describe were realities, and not the offspring of perturbed dreams. My inability to move was not accompanied with pain or uneasiness, but I felt as if the

principle of life had departed from my frame. At length I became totally insensible, and continued so till an increase of wind made the sea a little rough, which caused the vessel to roll. The motion, I suppose, had the effect of awakening me from my trance, and I contrived, some how or other, to get up and go upon deck. My memory was totally lost for about a quarter of an hour, and I had no ideas connected with any thing that was not present before me. I knew that I was in a ship, but nothing more. While in this state, I observed a man drawing water from the sea in buckets, and requested him to pour one on my head. After some hesitation he did so, and all my faculties were immediately restored, and I acquired a most vivid recollection of a vast variety of ideas and events which appeared to have passed through my mind, and occupied me during the time of my supposed insensibility. All this singular derangement had arisen from a copious inhalation of the fumes of Tobacco; for on examining the cabin, I found that the piles of packages consisted of that narcotic plant, and that quantities of it lay even under my bed; in short, that the sloop contained nothing else."—*Foreign Scenes, by J. Howison, Esq.* vol. ii. p. 279.

"As I was endeavouring to set a snake at liberty, which was about two feet in length, of a blueish colour, and had coiled itself round the body of a lizard, one of the Hottentots took out, with the point of a stick, from the short stem of his wooden tobacco-pipe, a small quantity of a thick black matter which he called tobacco-oil. This he applied to the mouth of the snake while darting out its tongue, as those creatures usually do when enraged. The effect of the application was instantaneous, almost as that of an electric shock. With a convulsed motion, that was momentary, the snake half untwisted itself, and never stirred more; and the muscles were so contracted, that the whole animal felt hard and rigid, as if dried in the sun. The Hottentots consider the oil of tobacco amongst the most active of poisonous substances; but it is never applied to the points of their arrows, being probably of too volatile a nature to retain its deleterious quality for any length of time."—*Barrow's Travels in Africa*, p. 268.

"A woman applied to the heads of three children, who were afflicted with scald-head, a liniment prepared with the powder of tobacco and butter: soon after, they experienced vertigoes, violent vomitings, and faintings; they had profuse sweats. During twenty-four hours, they walked as if they were intoxicated."—*Ephem. des Cur. de la Nat.* Dec. 11. Art. iv. p. 461.

We read in the same work of a person who fell into a state of somnolency, and died apoplectic, in consequence of taking by the nose too much snuff.

"The celebrated Santeuil experienced vomitings and horrible pains, amidst which he expired, in consequence of having drunk a glass of wine, into which some Spanish snuff had been put."—*Orfila.*

By some experiments instituted by Orfila, it was found "that 3vss. of common rappee snuff introduced into the stomach of a dog, and secured by ligature, caused nausea, giddiness, stupor, twitchings in the muscles of the neck, and death in nine hours, and that two drachms and a quarter applied to a wound, proved fatal in a single hour."

when the soluble portion is injected into the anus, than when it is applied to the cellular texture.

Treatment.—When Tobacco has been taken into the stomach, it must be evacuated either by the syringe, or by emetics, composed of the sulphate of zinc or of copper; or vomiting may be excited as practised in the first case, narrated under *poisonous effects*. But as the deleterious influence of Tobacco comes on almost instantaneously, acting with a sudden depressive power on the nervous system, other remedies must also be had recourse to. Stimuli to rouse the depressed and waning powers of life, such as brandy and ammonia, should be immediately given; and the activity of the poison endeavoured to be cancelled by the administration of some substance, which, by its chemical action, may render it, if possible, inert. *Nicotina* is scarcely soluble, and as tannin or gallic acid precipitates this substance in its uncombined state, an infusion of nut-galls or some other astringent infusion should be freely exhibited. Artificial respiration should also not be neglected, for, as Dr. Thompson observes, from the experiments of Mr. Brodie, there is every reason for supposing that this method of maintaining the functions of the lungs might prove beneficial, if an admixture of oxygen gas with common air were used. Frictions must likewise be generally employed, but more particularly to the region of the heart; and if ever acupuncture of this organ be advisable in asphyxia,* it must be so when produced by Tobacco; for independently of the proofs which Mr. Brodie has furnished of the direct effects of the infusion upon the heart, he has narrated a case, which we have already adverted to, in which a scalpel accidentally applied to it, while opening the pericardium, excited its reaction. Stimulating the rectum by warm purgatives, preventing the failure of respiration, or exciting it, if necessary, artificially, and keeping up the natural temperature, are important indications, that will suggest themselves to the mind of every well informed practitioner.

Medical Properties and Uses.—Dr. Fowler, in a distinct treatise, has adduced many cases in which an infusion of Tobacco was advantageously administered in dropsy: but as digitalis is more easily managed, and appears to exert the same kind of effects, it is generally preferred. He also recommends it in *dysuria*, and as that disease is sometimes connected with spasmodic action, Tobacco frequently proves useful; acting both as a diuretic and antispasmodic. The direct power which it exerts on the muscular system has led to its advantageous adop-

* For some interesting experiments on this subject, see "Saggio sul Agopuntura &c. by Dr. Antonio Carraro, Physician of Piove di Sacco."—*Annali Universali di Medecina*, Luglio, 1825.

tion in other spasmodic diseases, as colic, ileus, total suppression of urine, and strangulated hernia: in all these diseases the smoke has been thrown into the rectum by bellows suited to the purpose; but an injection of its infusion is more readily and generally employed, and as death has been produced by two, and even one dram infused in a pint of water, Sir A. Cooper recommends half the latter quantity to be administered first, and to be repeated at intervals till its depressing effects are experienced. It has been occasionally employed as an emetic, but its operation is harsh and dangerous: and as it exerts its effects when externally applied to the region of the stomach, it has been employed where emetics cannot be easily administered by the mouth. Its watery extract, in the dose of two or three grains, has been recommended for chronic catarrh and humoral asthma, and Tobacco, when smoked, has relieved the paroxysms of spasmodic asthma, and painful affections of the face, teeth, and ear. Its employment in *asphyxia* from drowning is now abandoned, and we are only surprised at the false theories which could have led to such an irrational practice. The Rev. W. Massie, on his return from the Mysore, informed us that the native practitioners in India use the leaf as a suppository to provoke the action of the bowels of children. Dr. O'Brien, of Dublin, warmly recommends the use of Tobacco enemata in tetanus and dysentery.

Snuff possesses all the power of Tobacco, and is useful as an errhine: and although much prejudice has been excited against it, from its supposed deleterious effects, most people can take it in moderate quantities, without experiencing any untoward symptoms. Some people suppose that because Tobacco when chewed lessens the appetite, it possesses nutritious qualities in an eminent degree; it is quite the reverse, for it paralyses the stomach, diminishes its nervous sensibility, and allays hunger alone by its sedative effects. Nor is the habit of smoking always to be persisted in with impunity, for independently of the deleterious effects of Tobacco on many constitutions, Sir A. Cooper remarks that most of the cases of cancer of the lip that fall under his care, are occasioned by the use of tobacco-pipes. The adhesive nature of the clay of which the pipe is made, causes it to stick to the lip, and when separated, pulls the lip in some degree with it: this being repeated over and over again by the constant practice of smoking, the thin tender skin of that part of the under lip on which the pipe rests, is torn off, and the end of the pipe now coming in contact with a raw surface, frets and irritates it, until at length it becomes a truly cancerous sore: pipes should therefore be waxed, or used with an ivory covering.

Externally, the bruised leaves of Tobacco have been applied to scabies, tinea capitis, prurigo, &c. with considerable advantage, either moistened or made into a poultice; but even in these cases,

violent constitutional effects have occurred, similar to those produced by the internal administration of too large a dose.

OFF: PREP.—Infusum Tabaci. *L.*
Vinum Nicotianæ. *E.*

FORM for Dr. Fowler's infusion:—

℞ Foliorum siccatorum Nicotianæ Virginiensis unciam unam.

Aquæ bullientis libram unam.

Macera per horam unam in vase clauso, in balneo mariæ posito, deinde, hujus infusi uncias quatuordecem exprime, et colaturæ adde spiritus vinosi rectificati uncias duas, ut melius conservetur.

DOSE.—From 80 to 200 drops.

ADULTERATIONS.—"When it exhales a fœtid odour, we may infer that it has been badly prepared, and not deprived of all its mucus; when pungent, the presence of some deleterious drug is indicated; Cascarilla is very usually added to impart a peculiar flavour; Nitre is also employed for the sake of making it kindle more rapidly, and to impress a lively sensation on the tongue; its vapour is of course very injurious to the lungs; its presence may be detected by heating a sample with hot water, and after filtering the solution through charcoal, setting it aside, in order that it may yield its crystals by evaporation. Traces of *Lead, Copper,* or *Antimony,* may be discovered by boiling Tobacco in strong vinegar, and after filtering it as before, by assaying it with appropriate tests. *Black Hellebore, Alum, Sugar,* and *Corrosive Sublimate,* are amongst the more usual sophistications. *Dried Dock* leaves are also sometimes substituted."—(Paris.)

"Snuff in its genuine form is powdered tobacco leaves, to which, however, a variety of additions are generally made, such as perfumes and volatile oils, carbonate of ammonia, muriate of ammonia, common salt, powdered glass, urine, and other substances, which are kept secret: some kinds of snuff are moistened with sugar cane juice, or molasses and water, and acquire a peculiar flavour from fermentation, such as the Macabau of Martinique."—*Brande.*

Anthemis nobilis

ANTHEMIS NOBILIS.

Common Chamomile.

Class XIX. SYGENESIA—*Order* II. POLYGAMIA-SUPERFLUA.

Nat. Ord. COMPOSITÆ DISCOIDEÆ, *Lin.* CORYMBIFERÆ, *Juss. De Cand.* &c. CORYMBIACEÆ, *Burn.*

GEN. CHAR. *Receptacle* convex, chaffy. *Fruit* crowned with a membranaceous pappus, *Involucrum* hemispherical, scales nearly equal, with scariose margins imbricated. *Florets* of the ray numerous.

SPEC. CHAR. *Leaves* bi-pinnate, semi-cylindrical, acute, somewhat downy. *Stem* procumbent. Scales of the *receptacle* membranous, obtuse, shorter than the florets.

Syn.—Chamœmelum odoratissimum repens, flore simplici, *Raii. Syn.* 185; *Bauh. Hist. v. S. p.* 1. 118. *f.*

Chamœmelum romanum. *Ger. Em.* 775. *f*; *Camer. Epit.* 646. *f.*

Chamœmelum 2. 102. *Hall. Hist. v.* 1. 44.

Anthemis nobilis, *Lin. Sp. Pl.* 1260; *Willd. v.* 3. 2180. *Fl. Brit.* 904; *Eng. Bot. v.* 14. *t.* 980; *Woodv. t.* 103; *Hook. Scot.* 247; *Stokes v.* 4. 242.

FOREIGN.—*Camomile Romaine*, Fr. *Camomilla Romana*, Ital.; *Manzanella de Botera*, Sp.; *Maçella*, Port.; *Roemische kamiller*, Ger.; *Babounj*, Arab.; *Kamille*, Dutch.

CHAMOMILE is a well-known perennial plant, which grows wild in Cornwall, Surrey, and many other parts of Britain. We found it in great abundance on Wimbledon Common, Enfield Chase, and all the dry elevated heaths near London. It flowers in August and September.

The roots are perennial, jointed, and fibrous. The stems, in a wild state, are mostly trailing, a span or more in length,

round, furrowed, foliaceous, and downy. The leaves are bipinnate, and of a pale green colour; the leaflets small, rather flat above, somewhat hairy, and generally divided into three pointed segments. The flowers are terminal, solitary, with a convex yellow disc, and numerous white, spreading, reflexed rays. The involucrum is hemispherical, and composed of several closely imbricated downy scales, with thin membranous edges; the florets of the disc are numerous, yellow, perfect, tubular, with five equal spreading segments; those of the radius, usually about eighteen, white, ligulate, spreading, with three teeth; the filaments are five, very short, capillary, and have their anthers united into a cylindrical tube; the germen is obovate, supporting a slender style, and furnished with a bifid reflexed stigma. The seeds are ovate, compressed and slightly crowned. The receptacle is conical, surmounted by minute chaffy scales, one to each floret, perceptible even to the naked eye, but very conspicuous under a lens. Fig (*a*) represents a floret of the radius; (*b*) a floret of the disc with the seed and chaffy scale; (*c*) the anthers spread; (*d*) a section of the receptacle.

The generic name, Anthemis is supposed to be derived from Ανθεω *floreo,* having an abundance of flowers;—the English from χαμαι, and μελον, an apple, hence the Latin "chamomilla," *quoniam odorem mali habeat.* (Plin. 1. 22. c. 21.)

Qualities and Chemical Properties.—The flower of this plant is collected before it is fully blown, and then dried. As the taste and odour reside in the tubular florets, which are largest in the single flowers, these are preferable to the double that are always sold in the shops—another instance of utility being sacrificed to appearance. Chamomiles have a bitter, aromatic, and slightly pungent taste, and a strong unpleasant odour. By distillation they yield a volatile oil, on which their virtues appear to depend; but in the preparation of the extract it is lost. Boiling also dissipates the oil. Both water and alcohol take up their active parts, which are the essential oil, resin, and a bitter principle.

All soluble preparations of iron, nitrate of silver, oxymuriate

of mercury, acetate and sub-acetate of lead, solutions of isinglass, and infusion of yellow cinchona bark, are precipitated by the infusion, and therefore "*incompatibles.*"

Medical Properties and Uses.—Chamomile is a powerful tonic and stomachic, and inferior to no other, when properly administered. It is an excellent and popular remedy for a weakened state of the stomach, attended by the ordinary symptoms of indigestion, as heartburn, loss of appetite, flatulency, &c. In such affections, particularly if accompanied by a sluggish state of the intestinal canal, the cold infusion, made with half an ounce of the flowers to a pint of water, and combined with aromatics and alkalies, is grateful to the stomach: or, should hot water be employed, it must be allowed to stand on the flowers ten minutes only;—the time recommended in the London Pharmacopœia: unless, indeed, we wish to excite or encourage vomiting, when a tepid strong infusion will do both. Administered in substance, Chamomile has been successfully employed in intermittent fevers; but occasionally produces diarrhœa. Sir John Pringle states, that the antiseptic powers of the Chamomile are 120 times greater than those of sea-salt: and, externally, the flowers are used for fomentation: hot water, however, is nearly as efficacious. The infusion is a useful vehicle as a clyster for other more active remedies: and the extract, in doses of ten or fifteen grains, combined with myrrh and preparations of iron, affords a powerful and convenient tonic, in the form of pill. The dose of the powder is from ten grains to half a drachm; that of the infusion from one ounce to two ounces, two or three times a day.

Off. Prep.—Decoctum Anthemidis nobilis. *L. E.*

We have already remarked, that the essential oil is dissipated by boiling.

Infusum Anthemidis. *L. E.*
Extractum Anthemidis. *L. E.*
Oleum Anthemidis. *L.*

The *Marutaæftida*, formerly called *Anthemis Cotula*, Stink-

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The *Marutaœftida*, formerly called *Anthemis Cotula*, Stink-

ing Chamomile, or May-weed, *receptaculis conicis, paleis setaceis, fructibus nudis,* has been erroneously ranked by some writers on toxicology among the vegetable poisons. It is an indigenous annual, growing in waste grounds and amongst corn. The whole plant has a strong fœtid odour, and, where it abounds, is often found to blister the hands of those that gather it, which Prof. Hooker attributes to the minute glands sprinkled over its surface. It is never prescribed in present practice, nor are we aware of its having ever proved poisonous in this country. Dr. Barton states that, like the common Chamomile, a strong decoction, given in the dose of a teacupful, will produce copious vomiting and sweating. In America it is used by the vulgar, as a sudorific in chronic rheumatism. A weak infusion, taken to a moderate extent, nauseates the stomach, and is sometimes employed to promote the action of an emetic. It was formerly used internally in scrofula, and hysteria; and externally in fomentations.

Morus nigra

XXXIX

MORUS NIGRA.

Common Mulberry-tree.

Class XXI. MONŒCIA.—*Order* IV. TETRANDRIA.

Nat. Ord. SCABRIDÆ, *Lin.* URTICÆ, *Juss.* URTICINÆ ARTOCARPACEÆ, *Bartl. Burn.*

GEN. CHAR. Male. *Calyx* 4-parted. *Corolla* 0. Female. *Calyx* 4-leaved. *Corolla* 0. *Styles* 2. *Seed* solitary, invested with the pulpy calyx.

SPEC. CHAR. *Leaves* broad heart-shaped, unequally serrated, somewhat lobed, scabrous above, villose underneath.

Syn.—Morus, *Ger. Em.* 1507; *Camer. Epit.* 179; *Matth. Valgr.* 284.
Morus fructu nigro, *Bauh. Pin.* 459.
Morus nigra, *Lin. Sp. Pl.* 1398; *Willd. v.* 4. 368; *Raii Hist.* 1429; *Woodv.* 352. *t.* 129; *Stokes, v.* 4. 378.
FOREIGN.—*Murier noir*, Fr.; *Morone o Gelso*, Ital.; *Moral*, Span.; *Schwarze Maulbeerbaun*, Ger.; *Moerbeiboom*, Dutch; *Taita-iba*, Brazil; *Tut*, Pers.

THE Mulberry-tree grows naturally on the coast of Italy and in Persia; but has been cultivated in England since the end of the sixteenth century. It is generally grown as a standard, and flourishes best in a rich deep light soil. The flowers are produced in June, and the fruit ripens in September.

The tree is not lofty, is much branched, and covered with a rough brown or greyish bark. The leaves, which stand upon short foot-stalks, are about five inches long, and four inches and a half broad; numerous, cordate, serrated, rough, of a deep green colour on the upper surface, and paler and tomentose underneath. Both the male and female flowers are produced on the same plant. The *male* flowers are disposed in close cylin-

drical catkins, about an inch and a half long, and composed of several florets: each floret consists of a calyx divided into four deep, ovate, concave segments, inclosing four awl-shaped filaments, having simple anthers. The *female* flowers consist of a calyx, which is permanent, resembling that of the male; and both are destitute of a corolla; the germen is roundish and supports two reflexed styles furnished with simple stigmas. The fruit is a large succulent false berry, or more properly a compound berry, composed of a number of smaller berries, or *acini*, each containing a single seed, and attached to a common receptacle Fig. (A) represents the male florets; *(a)* a floret previous to the bursting of the anthers; *(b)* a flower expanded; *(c)* a female floret; *(d)* the fruit.

There are several species of the Mulberry; the M. *alba*, being the one which is cultivated to feed the silk-worm, the silk of which is more coarse when they are fed on the M. *nigra*. Another variety is cultivated in Japan, for the sake of its inner bark, from which paper is manufactured. This plant has lately been generically distinguished from the Mulberry, and is now called the *Broussonetia papyrifera*. The generic name *Morus* is derived immediately from the Greek Μορεα, and that from the Celtic *Mor*, which signifies black, the most common colour of the fruit. *Morus tinctoria* affords the fustick wood of the dyer, of which considerable quantities are brought into Europe.

Qualities.—Mulberries are inodorous, possess a sweet subacid taste, and yield a fine rich-coloured juice, which contains tartaric acid, jelly, and mucus.

Medical Properties and Uses.—This fruit is very grateful to the parched mouths of fever-patients, but is apt to produce diarrhœa if eaten too freely. The syrup is used in gargles, on account of its acidulating properties and its beautiful colour. According to Bergius, the *bark of the root* has been successfully administered in doses of half a drachm, to expel the tape-worm. He also asserts that it acts on the bowels.

Off. Prep.—Syrupus Mori. *L.*

Lavandula Spica.

W. Clark del. et sculp.

XL

LAVANDULA SPICA.

Lavander, or Spike Lavender.

Class XIV. DIDYNAMIA.—*Ord.* I. GYMNOSPERMIA.

Nat. Ord. VERTICILLATÆ, *Lin.* LABIATÆ, *Juss.* LABIATIFLORÆ, LABIATÆ, *Bartl.*

GEN. CHAR. *Calyx* ovate, somewhat toothed, supported by a bractea. *Corolla* resupinate. *Stamens* within the tube.

SPEC. CHAR. *Leaves* sessile, linear-lanceolate. *Spike-like* thyrsus, interrupted, naked at the summit.

Syn.—Lavandula flore cæruleo, *Ger. Em.* 583. 1.
Lavendula major, sive vulgaris, *Raii. Hist.*, 512; *Park*, 73.
Nardus italica, sive Spica recentiorum, *Lob.* 1. 431.
Pseudo-nardus, quæ vulgo Spica. *Bauh. Hist. v.* 3. 282.
Lavendula foliis linearibus, spicis nudis. *Hall. Stirp. Helv.* n. 232.
Lavandula Spica. *Lin. Sp. Pl.* 800; *Willd. v.* 3. 60; *Woodv.* 150; *t.* 55; *Stokes, v.* 3. 304.

FOREIGN.—*Lavande*, Fr.; *Lavandola*, Ital.; *Alhuzema Espliego*, Span.; *Alfazema*, Port.; *Lavendelblumen*, Ger.; *Lavendel*, Dutch; *Lawendul*, Russ.

LAVENDER is a dwarf, odoriferous shrub, a native of the south of Europe, and appears to have been cultivated in England previously to the year 1568; it flowers from June to September.

The plant is shrubby, much branched, and rises from two to four feet high; the bark of the younger shoots being of a pale green colour, while that of the stem is rough and brown. The leaves are numerous, linear, hoary, entire, slightly rolled back at the edges; the upper ones sessile, the lower petioled. The flowers form terminating spike-like thyrsi which consist of interrupted whorl-like cymes, in which the flowers are from six to ten, and are furnished with small ovate bracteas. The corolla is of a bright blue

colour, and consists of a longish cylindrical tube, divided at the mouth into two lips, the uppermost of which is larger and bifid, the lower expanded downwards, and divided into three segments. The filaments are four, inclosed within the tubular part of the corolla, and support small simple anthers; the style is slender, and crowned with a bilobed stigma, and rises from the depressed centre of a tetrakenium at the base of the tube. Fig (*a*) represents a flower magnified and cut open, to show the insertion of the stamens; (*b*) the germen and pistil; (*c*) the calyx; (*d*) a bractea.

There are three varieties of Lavender, namely, L. *angustifolia flore albo*; L. *latifolia*; and the L. *Spica*, the subject of this article, which is largely cultivated in the vicinity of London; at Mitcham, in Surrey; Henley-on-Thames, and many other places.

Culture.—Lavender is propagated by cuttings or young slips, by planting them in rows, two or three feet asunder, any time in the spring months. The fourth season they will yield a full crop, after which the plants will continue productive for three or four years. The flowers are gathered in June, dried in the shade, and put up in bundles for sale.

Qualities.—The flowers of Lavender possess an agreeable fragrant odour, and a pungent bitter taste. "*Alcohol* extracts their virtues completely, and elevates in distillation all their odorous parts; water acts less completely," but the oil is obtained in distillation from it.

Medical Properties and Uses. — Cullen observes that, whether applied externally or internally, the *essential oil*, commonly called oil of spike, is a valuable stimulant. The spirit of Lavender enters into the composition of a compound tincture, which is grateful to the palate, and forms a useful cordial for the nervous of the fair sex. The dried leaves were formerly used as a sternutatory, and still enter into the composition of some of the cephalic snuffs.

Off. Prep.—Oleum Lavandulæ. *L. E. D.*
Spiritus Lavandulæ. *L. E. D.*
Spiritus Lavandulæ compositus. *L. E. D.*
Linimentum Camphoræ compositum. *L.*

Humulus Lupulus.

HUMULUS LUPULUS.

The Hop.

Class XXII. DIŒCIA.—*Order* V. PENTANDRIA.

Nat. Ord. SCABRIDÆ, *Lin.* URTICÆ, *Juss.* URTICEÆ, *De Cand.* URTICACEÆ, *Burn.*

GEN. CHAR. Male. *Calyx* 5-leaved. *Corolla* 0. *Anthers* with 2 pores.

Females. *Scales* of the catkin large, persistent, concave, oblique, entire. *Perianth* 0. *Styles* 2. *Seed* 1, within a leafy bracte.

SPEC. CHAR. Humulus, the only species.

Syn.—Lupulus mas et fœmina, *Raii. Hist.* 156; *Bauh. Pin.* 298. 1, 2.
Lupulus salictarius, *Ger. Em.* 885; *Fuch.* 164; *Plin. Hist. Nat. l.* 21, n. 15.
Lupulus sativus, seu sylvestris, *Park.* 176; *Trag.* 812.
Lupulus n. 1618. *Hall. Hist.*; *Dod. Pempt.* 409. 1; *Camer. Epit.* 933, 934.
Humulus Lupulus, *Lin. Sp. Pl.* 1457; *Willd. v.* 4. 769; *Eng. Bot.* 427.
FOREIGN.—*Houblon grimpant*, Fr.; *Lupolo*, Ital.; *Hombrecillo*, Span.; *Hopfen*, Ger.; *Hoppe*, Dutch; *Hymel*, Pers.; *Chmel.* Russ.; *Chmiel*, Pol.; *Baruer*, Indian.

THE Hop is a perennial-rooted plant with an annual stem, and is the only species of the genus. It is a native of Britain and most parts of Europe, and is found in our hedges; flowering in June, and ripening its seeds in September.

From a branching root, rise several twining, rough, angular, flexible stems, which on poles, and in hedges, frequently reach the height of twenty feet or more. The leaves are opposite, in pairs, cordate, serrated, entire or lobed, scabrous, of a deep green colour, and sustained on long foot-stalks, which, as well as the leaves, are rough with minute prickles. Between the leaf-stalks are a pair of cordate, entire, reflected, smooth stipules. The flowers, which are on distinct plants, are axillary or terminal, and furnished with bracteas. The *males* are in drooping panicles of a pale green colour: the calyx consists of five oblong, concave minutely serrated sepals: there is no corolla:

the filaments are five, capillary, and very short with oblong anthers, opening at the apex by two pores. The *females* are in axillary stalked, drooping cones, or strobiles, composed of membranous scales of a pale greenish colour, and containing the germen, which is small, having two very short subulate, reflex styles, and awl-shaped downy stigmas. The scale incloses the seed at its base, which is roundish, of a brownish colour, and truncated. Fig. (1) represents the male plant; fig. (2) the female. Fig. (*a*) is a male flower magnified; (*b*) the front of an anther considerably magnified, showing the two pores by which they open at top; (*c*) the back of an anther magnified; (*d*) a single scale of the catkin; (*e*) the germen with the two styles.

The generic name Humulus is derived from *humidus*, damp, or *humus*, fresh damp earth, as Hops flourish only in rich moist soils. The specific denomination *Lupulus* is a corruption of *Lupus salictarius*, as it was formerly called, because, according to Pliny, it grew amongst willows, to which, by twining round and choking them, it became as destructive as the wolf to the flock. Our English name, *Hop*, evidently comes from the Anglo-Saxon *hoppan*, to climb, and is thus peculiarly descriptive of the habits of the plant.

In the counties of Kent and Sussex, where the female plants are cultivated extensively, for the use of the brewers, the Hop-growers distinguish several varieties, as the early white, the long white, the oval, and the garlic Hop, as well as the Canterbury, the Goldings, and the Flemish.

The Hop is also indigenous to America. Its use for the preservation of beer was first introduced from Flanders, in the fifteenth year of Henry VIII. And Parkinson says, "the ale which our forefathers were accustomed only to drink, being a kind of thicker drink than beere, is now almost quite left off to be made, the use of Hoppes to be put therein, altering the quality thereof, to be much more healthfull, or rather physicall, to preserve the body from repletion of grosse humours, which the ale engendered." Like most innovations, the Hop had many enemies at first, Blith informing us, in his "English Improver Improved," p. 240, that the city of London petitioned

parliament against two nuisances, viz. Newcastle coals "and Hops, in regard they would spoyl the taste of drink, and endanger the people."

Culture.—For an account of the culture and management of the Hop the reader may consult "Loudon's Encyclopedia of Agriculture," and "Miller's Gardener's Dictionary," by Prof. Martyn.

Qualities and Chemical Properties.—The strobiles are picked when ripe, and are dried by artificial heat. They have a fragrant, aromatic, but oppressive odour; and a pungent, bitter, slightly astringent taste. By infusion in water these virtues are extracted; by distillation an essential oil is obtained; by boiling, the aromatic properties are dissipated. "The watery infusion has a pale straw colour, is rendered muddy by the mineral acids; alkalies deepen its colour; it strikes an olive with the sulphate of iron; is precipitated by alcohol, solutions of acetate of lead, nitrate of silver, and tartarized antimony; and when rubbed with magnesia, or lime, a rod dipped in muriatic acid discovers the presence of ammonia. The etherial tincture, when evaporated on water, leaves a pellicle of greenish, intensely bitter resin, and deposits some extractive."* The fragrance and bitterness of hops reside in a peculiar principle, formed spontaneously upon the scales of the strobiles of the female plants. This substance, which may be separated by shaking or sifting the strobiles, has received the names of *Lupulia* or Lupulin; in the market it is known under the term *condition*.

It was Dr. Ives, of New York, who first satisfactorily showed, by various experiments, that Hops, by being beaten and sifted, yield a powder which he termed *lupulin*, that has a very subtle aroma, which is taken up by water and alcohol, and which is rapidly dissipated at a high heat; that the lupulin contains an extractive matter which is soluble only in water; that it contains tannin, gallic acid, and a bitter principle which are soluble in alcohol and water; that it contains resin which is soluble in alcohol and ether, and wax which is soluble only in alkalies and boiling ether; that it contains neither mucilage, gum, or gum resin; that the aromatic and bitter properties of the lupulin are more readily and completely imbibed by alcohol than by water, and much sooner by both when hot than when cold; that about five-eights of the whole

* Thompson.

substance is soluble in water, alcohol, and ether, there being about three-eights of it vegetable fibrous matter; 120 grains of lupul in contains about

Tannin	5 gr.
Extractive matter	10
Bitter principle	11
Wax	12
Resin	36
Lignin	46

Hops from which all the lupulin had been separated, when acted upon by water, alcohol, &c. gave a portion of extract which, however, possessed none of the characteristic properties of the hop.

Having ascertained that the lupulin was the only important part of the hop as regarded brewing, Dr. Ives next endeavoured to ascertain the quantity afforded by a given weight of hops: 6 lbs. of hops from the centre of a pocket were put into a light bag, and by thrashing, rubbing, and sifting, 14 ounces of lupul in were separated. It is supposed, therefore, that dry hops would yield about a sixth part of their weight of this substance.

Two barrels of beer were then made, in which 9 oz. of lupulin were substituted for 5 lbs. (the ordinary quantity) of hops. The result confirmed every expectation. Though the quantity of lupulin was less than usually enters into the same quantity of wort, and though the weather during June was unusually warm, and therefore unfavourable to the beer, still, at the end of five weeks, it was very fine. As a further experiment, —equal quantities of the beer were exposed in open phials to the sun, and a scruple of lupulin was added to one of them; this was unchanged at the end of fifteen days; the other became mouldy and sour in ten days.

The advantages which promise to result from the discovery that lupulin may replace the use of the whole hop in brewing, are, the diminished expenses of conveyance and storage, the facility of preserving it from the air, the non-absorption of wort by the hops, and the absence of a useless nauseous extractive matter which remains in the leaves.

Since Dr. Ives published his account, he has edited two editions of Dr. Paris's Pharmacologia, in the last of which he says: "Soon after the publication of my essay on the hop in 1819, I discovered the incorrectness of my deduction and statement, that the lupulin contained *no essential oil*. . . . . As to the general results of my experiments, detailed in my paper, I at that time attached importance to them, from the belief that they would ultimately lead to vast economical improvement, in the permanent preservation of the only valuable portion of the hop, and in the manufacture of malt liquors. So far as can be determined from its sensible properties, a quantity of lupulin which has been kept in bottles for three years, and which is now by me, has lost none of its aromatic flavour, nor is in any respect deteriorated by keeping. That the lupulin possesses all the virtues of the hop essential to the good quality and preservation of beer, is demonstrably evident from an experiment made in 1820, by an experienced and respectable brewer in this city. He obtained by thrashing and sifting, from a bag of hops weighing about 150 pounds, 21 pounds of lupulin. Of this, and the usual quantity of other ingredients, he made forty barrels of beer; the quantity into which he ordinarily put 150 pounds of hops. The summer following, and not

less than four or five months after it was made, I had an opportunity of comparing this beer with that manufactured about the same time in the usual manner. The former was less bitter, but in no respect inferior to the latter. It would doubtless have been better than it was, had *all* the lupulin been separated from the hops used in the experiment, but that was impracticable. There can therefore now be no doubt of the correctness of my former opinion, that if any mechanical means can be devised, by which the lupulin may be easily, and readily, separated from the strobiles, it will consummate an improvement of incalculable value, in the preservation of hops, and the art of brewing."

The bitter principle of the Hop is soluble both in alcohol and water, while the extractive matter is soluble only in water; and M. Payer, and A. Chevalier, have confirmed Dr. Ives's assertion, that the properties of the Hop reside in the yellow grains scattered over the membranous scales of the female flower. They also discovered a volatile oil in lupulin, which is similar in odour to the Hop, but much more penetrating, narcotic, and very acrid in the throat. On account of its volatility, and solubility, to a great extent in water, it was not, at first, detected by Dr. Ives.

The following is M. Planche's method of purifying lupulin.

"To separate the sand from the lupulin, put it into water; shake it for a few minutes; decant that which is held in solution by the water, and a dark-coloured sand is deposited. Repeat the process several times, and spread the lupulin, which is insoluble in water, on bibulous paper; let it drain, and then dry it in the air, neither exposed to the sun, nor to a temperature above 76° (Faht.) It should be prepared yearly, and this cleansing process must be quickly conducted, or it will undergo a change."

The young shoots, blanched, are sometimes eaten as a substitute for asparagus; and from the *binds* coarse sacking has been manufactured, and a yellow dye extracted.

Economical Uses.—Hops are boiled in the wort, partly, to communicate their peculiar aromatic flavour; partly, to cover the sweetness of undecomposed saccharine matter, and in consequence of the gallic acid and tannin they contain, to separate a portion of a peculiar vegetable mucilage, somewhat resembling gluten, which is diffused through the beer. The compound thus produced, separates in small flakes like those of curdled soap, by which the beer is rendered less liable to spoil; nothing contributing more to the conversion of beer, or of any other vinous fluid, into vinegar, than mucilage. Hence all full-bodied

and clammy ales, abounding in mucilage, and which are generally ill fermented, are apt to run into the acetous fermentation.

Surrogates.—A compound of extract of quassia, and liquorice, is used by brewers, to economise both malt and hops, and is termed "*multum*;" and for imparting an intoxicating effect, they dissolve an extract of cocculus indicus, which they call "*Black Extract.*" * The following vegetable productions have been, and some of them still are, substituted in part for Hops; but as few of them contain tannin, and none in sufficient quantity, they simply impart a bitterness, unallied to the aromatic taste of the Hop, and possessing scarcely any of the chemical qualities for which that plant is more particularly employed in beer:—

Centaurea *benedicta*, blessed thistle,

Centaurea *calcitrapa*, star-thistle,

Menyanthes *trifoliata*, marsh-trefoil, buckbean,

Teucrium *scorodonia*, wood-sage,

Glechoma *hederacea*, ground ivy, semetimes called ale-hoof, or tun-hoof,

Ginger, gentian, seeds of colocynth, broom, quassia, aloes, horehound.

Medical Properties.—Hops are generally considered to be tonic, diuretic, and somewhat narcotic. For the latter virtues they cannot be depended on; but in a woman we treated for a compound fracture of the tibia, a drachm of the tincture procured sound and refreshing sleep of several hours' duration, after most of the other narcotics had been given in large doses, ineffectually.

An infusion of the root of the Hop has been occasionally recommended in the place of the decoction of sarsaparilla, but is a substitute on which we should place but little reliance. Dr. Chapman of America, in his "Therapeutics," recommends it for nephritis, and for spasmodic pains of the uterus, occurring after parturition; and Dr. Maton speaks highly of the utility of Hop in arthritic rheumatism, and asserts that it allays pain, produces sleep, and allays the frequency of the pulse, at the same time

* Accum.

that it increases its firmness. Externally, a decoction of Hop has been advantageously used for painful tumefactions; and the powder rubbed up with lard, was recommended by the late Mr. Freake, as an application to cancerous ulceration. A cataplasm made of an infusion of the dried strobiles, has been applied to ill-conditioned and sloughing ulcers with decided benefit.

"With regard to the medicinal efficacy of Hops, (says Dr. Ives,) every accurate observer must acknowledge, that they possess little merit, if administered according to the directions given in our pharmacopœias. The quantity of proof spirit given in the tincture, would produce stimulating effects, independent of any properties which it imbibes from the Hops; and, although its action may be modified by their combined agency, so as, in some measure, to increase the cordial and invigorating influence of the alcohol, it is difficult to conceive, that the tonic, or narcotic virtues of the Hop, should be sufficiently concentrated, to produce much remedial benefit. It is otherwise with the pharmaceutical preparations of the *lupulin* which I have been accustomed to prescribe. Pretty extensive observation has confirmed my former opinion, that diseases which are the consequence of exhausted excitability, or more directly, of a deranged state of the stomach and bowels, are certainly much relieved by this medicine. It frequently induces sleep and quiets nervous irritation, without causing costiveness, or impairing, like opium, the tone of the stomach, and merely increasing the primary disease. The preparation most commonly used in this city, is the tincture prepared by digesting ℥ij of the lupulin in Oj of alcohol. Dose from ʒj to ʒij.

"Inquietude and watchfulness, connected with excessive irritability in all its gradations, from the restlessness consequent upon exhaustion and fatigue, to the most uncontrollable paroxysm of delirium tremens, are more frequently allayed by this remedy than by any other in ordinary use. Another eligible mode of exhibiting the lupulin is in pills. From two to four pills, each containing three grains of the powder, may be given at a dose. Dr. Desroches, who published a Dissertation on the Hop in 1803, supposed that its narcotic principle resided in the essential oil; but is it not

more than probable that this was a conjecture arising from the imaginary soporific virtues of the Hop pillow? It requires much experience, and accurate observation, to speak confidently upon the subject; but from having frequently used the lupulin collected from old Hops, in which little aroma seemed to remain, and also the extract prepared by decoction, by which process the essential oil is chiefly dissipated, I am still of opinion, that its narcotic properties are in the resinous extract."

Dose.—The dose of the extract may be from five to ten grains; of the tincture from half a drachm to a drachm, once or twice a day,

Off. Prep.—Extractum Humuli. *L.*
Tinctura Humuli. *L. E.*

Formulæ.

Powder of Lupulin.—Take of Lupulin 1 part,
White sugar 2 parts,

Rub the sugar into a coarse powder, then add the lupulin to it by degrees, and blend them intimately together. In the Pharmacopée Française, this is called M. Magendie's formula, and the sugar appears to be added merely to divide the lupulin, which forms an adhesive mass by being beat. Such a mass is easily formed into pills, and is the best preparation of lupulin that can be used, if we wish to rely simply on its effects.

"*Tincture of Lupulin.*

Take of Lupulin . . . ℥j.
Alcohol . . . ℥ij.

Digest for six days in a close vessel, press out the liquor, filter it, and add a sufficient quantity of alcohol to make ℥iij of tincture. Previously to maceration, the lupulin should be divided, by beating it up with sand. The *dose* may be from thirty drops, to a drachm.

Syrup of Lupulin.

Take of Alcoholic Tincture of Lupulin 1 part.
Simple Syrup . . . . . 7 parts.

Pommade de Lupuline.—(Pharmacopée Française.)

Take of Lupulin, bruised 1 part.
Lard . . . . 3 parts.

Dissolve in a warm bath, and strain it through a lawn sieve. This ointment is recommended as a substitute for that of Mr. Freake, already adverted to.

XLII

SINAPIS ALBA.

White Mustard.

Class XV. TETRADYNAMIA.—*Ord.* II. SILIQUOSA.

Nat. Ord. SILIQUOSÆ, *Lin.* CRUCIFERÆ, *Juss. De Cand, &c.*

GEN. CHAR. *Pod* rather tapering, valves ribbed. *Seeds* subglobose. *Calyx* spreading.

SPEC. CHAR. *Pods* hispid, spreading, shorter than the broad ensiform beak. *Leaves* lyrate.

Syn.—Sinapi album siliquâ hirsutâ, semine albo vel rufo, *Raii Syn.* 295; *Bauh. Hist. v.* 2. 858. *f.*

Sinapi album, *Ger. Em.* 244. *f.*

Sinapi primum genus, *Fuchs. Hist.* 538. *f.*

Sinapi secundum, *Matth. Valgr. v.* 1. 515. *f.*; *Camer. Epit.* 333. *f.*

Sinapi, n. 466. *Hall. Hist. v.* 1. 203.

Sinapis alba, *Lin. Sp. Pl.* 933; *Willd. v.* 3. 535; *Fl. Brit.* 721; *Curt. Lond. fasc.* 5, *t.* 48; *De Cand. Syst. v.* 2. 620; *Stokes, v.* 3. 474.

FOREIGN.—*Moutarde.* Fr.; *Senopa bianca,* Ital.; *Grano de Mostazo,* Sp.; *Senfsamen,* Ger.; *Gortschisa,* Russ.; *Kabar,* Arab. *Mosterd,* Dutch; *a,* Pol.

THERE are two species of Mustard admitted into our national pharmacopœias: the White Mustard, *sinapis alba*, and the Black, or Common, *sinapis nigra.* Both are indigenous annuals, growing naturally in fields, and both have been cultivated here, and in most parts of Europe, for an unknown period. The White Mustard flowers in June, and ripens its seed in July.

White Mustard has a small tapering root. The stem is erect, branched, rough, with slender reflexed hairs, and rises to the height of about two feet. The leaves are lyrate, deeply cut, roughish, and of a bright green colour. The flowers are yellow, and form terminal racemes, each having four petals disposed in the form of a cross. The leaves of the calyx are linear, green,

and spread horizontally. The filaments, germen, and pistil, resemble those of the following species. The flowers are succeeded by short, two-edged, very tumid pods, spreading on nearly horizontal stalks, rough, with numerous minute reflexed bristles, interspersed with larger upright ones; the beak is longer than the pod, is bristly, sword-shaped, curved upwards, and terminated by the compressed style and cloven stigma. The seeds are rather large, few, and of a pale yellowish brown colour. Fig. *(a)* represents a lower leaf; *(b)* the stamens, pistils, and glands, *(d)* a pod, or silique; *(e)* a seed to show the incumbent pleurorhizous radicle.

SINAPIS NIGRA.— *Common Black Mustard.*

GEN. CHAR. See *Sinapis Alba.*

SPEC. CHAR. *Pods* quadrangular, smooth, slightly beaked, pressed to the stem. *Lower leaves* lyrate; *upper* linear-lanceolate, entire, smooth.

Syn.—Sinapi sativum secundum, *Raii Syn.* 295; *Ger. Em.* 344.

Sinapi siliquâ latiusculâ glabrâ semine rufo, sive vulgare, *Bauh. Hist. v.* 2. 855, *f.*

Sinapi sativum primum, *Ger. Em.* 244; *Dod. Pempt.* 706.

Sinapi primum, *Matth. Valg. v.* 1. 514. *f.*; *Camer. Epit.* 323. *f.*

Sinapi n. 465; *Hall. Hist. v.* 1. 202.

Sinapis nigra, *Lin. Sp. Pl.* 933; *Willd. v.* 4. 555; *Fl. Brit.* 722; *Woodv. t.* 151; *De Cand. Syst. v.* 2. 608; *Stokes*, 3. 475.

FOREIGN.—*Senevé*, Fr.; *Senape*, Ital.; *Mostaza nigro*, Span. *Schwarzer Senfs*, Ger.

COMMON Mustard sends up a smooth, branched stem, which is taller and more spreading than the preceding, to the height of three or four feet. The *lower* leaves are large, lyrate, rough, variously lobed and toothed; the *upper* ones petioled smooth, lanceolate, entire, and spreading or hanging downwards. The flowers are pale yellow, and smaller than the preceding. The calyx is yellowish and spreading; petals obo-

vate; filaments simple, erect, supporting oblong anthers; germen cylindrical, tapering into a short style, which is crowned with a knobbed stigma. The pods are small, smooth, obtusely quadrangular, pressed close to the stem, and terminated by the permanent style and capitate stigma. The seeds are numerous, round, shining, and of a dark brown colour. The French call the plant "*sénevé*," and confine the term "*moutarde*" to prepared table mustard.—Fig. (*c*) represents a pod or silique of common mustard burst open, showing the situation of the seeds.

The generic name Sinapis, which occurs, with slight variations in the orthography, in the works of Plautus, Pliny, and Columella, is retained in our modern nomenclature from these celebrated authors. Theophrastus and Dioscorides call it Σινηπι. It is met with also under the terms σιναπι and ναπυ; παρα το σινεσθαι τους ωπας, from its pungency affecting the eyes. De Theis conjectures that this word comes from *Nap*, a Celtic name for all plants allied to the radish. The colour of the respective seeds suggested the trivial appellations, alba and nigra. Mustard, moutarde, mosterd, &c. are said to be all contracted corruptions of *must*um *ard*ens, *hot must:* the sweet *must* of new wine being one of the old ingredients in mustard prepared for dietetic uses; a practice which is still adhered to by the French. In moistening mustard powder for the table both the flavour and appearance are improved by mixing it with rich milk; but this mixture has the disadvantage of not keeping good for more than a couple of days.

Distinctive Characters.—The difference in point of form betwixt the leaves and pods of the present species, and those of the preceding sort, distinguish the two plants at once. The Black Mustard is a taller plant than the white; the upper leaves of the black are narrow and pendant, the flowers small, the pods quite smooth, and lying close to the stem; while in the white, the flowers are large, the pods rough or hairy, and standing out from the stalk.

As *substitutes* for either the black or common Mustard, most of the Cruciferæ may be used, especially the Sinapis *arvensis*, Myagrum *sativum*, Sisymbrium *officinale*, the Erysimum, Lepi-

dium, Turrites, Brassica, Sinapis *orientalis*, *Chinensis*, and *brasicata*; the latter is commonly cultivated in China. The Raphanus *Raphanistrum*, or wild radish, is said to be so complete a substitute, that the seeds are often separated in the process of cleaning grain by farmers, and sold to the mustard or oil millers, who dispose of it as Durham Mustard.

Professor Brande states that the bright yellow powder sold under the name of *flour of mustard*, and used at the table, is a compound of black and pale mustard-seed, Cayenne pepper, wheat flower, and turmeric; a portion of sulphur may be detected in the different kinds of mustard seeds, and when mustard, as prepared for a condiment, putrifies, it exhales the odour of sulphuretted hydrogen.

Qualities and Chemical Properties.—The seeds of both the black and white mustard agree in their sensible qualities, and are used indiscriminately at our tables. They are pungent and acrimonious when bruised, and by the addition of vinegar become much more so. A mild oil, having a sweetish taste and a slight nauseous odour, and which soon turns rancid, is yielded by expression, the acrid matter being chiefly retained by the fecula. The seeds afford one-fifth of their weight of this oil, which in large doses operates as a purgative. The mark which remains after expressing is more pungent than the seeds previously were, and on this account they are submitted to pressure previous to being formed into flour of mustard to be used as a condiment. Unbruised, they simply yield mucus to boiling water, which resides in the skin. Water takes up all the active properties of the powder of mustard, and alcohol but little. The seeds give off ammonia by trituration with lime water, which is probably owing to some decomposition taking place, which, yielding hydrogen, it combines with the nitrogen present in the seeds, and the volatile alkali is produced.

Dr. Cullen long ago observed, that if mustard-seeds be taken fresh from the plants, and ground, the powder has little pungency, but is very bitter; by steeping in vinegar, however, the essential oil is cooled, and the powder becomes extremely pungent. M. Thibierge has since analyzed mustard, and obtained

from it the following products:—1. A soft, fixed oil, of a dark greenish colour, soluble in alcohol and ether, which is procured by pressure. 2. Another oil, obtained by distillation, of a golden yellow colour, volatile, heavier than water, having a hot acrid taste, soluble in alcohol and depositing sulphur. It is this oil which irritates the eyes and excites tears, in mustard prepared for the table, and which vesicates when mustard is applied to the skin. 3. An albuminous vegetable principle; 4. a large quantity of mucilage; 5. sulphur; 6. nitrogen; 7. the seeds incinerated appear to contain phosphate and sulphate of lime, and a little silex. [*Journ. de Pharm.* v. 439.] Henry and Garot have ascertained that mustard contains a peculiar acid, which they have named the sulpho-sinapic, in which sulphur is supposed to exist in a peculiar state of combination. [*Journ. de Chirur. Med.*]

Medical Properties and Uses.—A large tea-spoonful of the powder of mustard-seed mixed in water, produces vomiting, and on account of its stimulating properties, is perhaps preferable to other emetics, when the stomach has been rendered torpid, by apoplectic, or paralytic affections. It is even asserted that it has acted in such cases, when other emetics have failed; and diffused in a large quantity of warm water, it is always a useful auxiliary to them. The unbruised seeds, swallowed in doses of half an ounce to an ounce, have relieved chronic rheumatism, and taken in the same manner, are a popular remedy for amenorrhœa and chlorosis. Bergius, who is extremely fond of combining other agents with cinchona bark, says that its activity is much increased, by being mixed with flower of mustard, and he even asserts that he has cured intermittents solely by its use. The great Boerhaave, also, gives the case of a girl at Amsterdam, who after taking a variety of medicines for chorea, was at last restored to perfect health by white mustard seeds. They are proper, he observes, in hypochondriac affections, obstructions of the liver, and spleen, in dropsy, scurvy, cachexy, and chlorosis. Combined with horse-radish, they are stimulant and diuretic, and as such are useful in broken down constitutions. In cases of dyspepsia, attended by habitual costiveness in leucophlegmatic constitutions, two or three tea-spoonfuls of the whole

seed, repeated two or three times a day, will frequently prove beneficial, by stimulating the chylopoietic viscera to a regular performance of their functions: but the injudicious manner in which their virtues have lately been lauded, has led to the abuse of a useful remedy, which in improper hands has produced ulceration of the mucous membrane of the stomach and intestines, and other serious consequences. Instances of this kind are mentioned in Wheeler's Catalogue of the Officinal Plants growing in Chelsea Gardens. He says, he has known the seeds retained for more than a week in the *primæ viæ*, and enteritis, and even death, to ensue from these irritating seeds entering the appendix cœci vermiformis. Van Swieten also relates the case of a strong healthy man, attacked with a quartan ague, who swallowed a large quantity of bruised mustard seeds steeped in Hollands. Inflammatory fever followed, and carried him off in three days. In typhus fever, when there is extreme depression of the vital powers, or determination of blood to the head; and in comatose affections, cataplasms, or sinapisms, as they are more frequently termed, composed of equal parts of flour of mustard and of crumbs of bread, made into a paste with hot vinegar, are applied to the feet, and act as powerful rubefacients. If continued too long, very intense pain is produced by them, and inflammation, which it is difficult to subdue.

Off. Prep.—Cataplasma Sinapis. *L. D.*

*** Whitehead's "Essence of Mustard" consists of oil of turpentine, camphor, and spirits of rosemary; to which is added a little flour of mustard. His "Essence of Mustard Pills" are Balsam of Tolu, with resin!

Amygdalus communis

XLIII

AMYGDALUS COMMUNIS.

The Common Almond-tree.

Class XII. ICOSANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. POMACEÆ, *Lin.* ROSACEÆ, *Juss.* DRUPACEÆ, *De Cand.* AMYGDALACEÆ, *Burn.*

GEN. CHAR. *Calyx* 5-cleft. *Petals* 5. *Drupe* with a nut perforated.

SPEC. CHAR. The lower serratures of the leaves glandular; the flowers sessile, and in pairs.

Syn.—Amygdalus, *Park. Theatr.* 1515; *Ger. Em.* 1445.
Amygdalus amara et dulcis, *Bauh. Hist.* 1. 174.
Amygdalus foliis glabris, *Hall. Stirp. Helv. n.* 1080.
Prunus Amygdalus, *Stokes, Bot. Mat. Med.* 3. 101.
Amygdalus communis, *Lin. Sp. Pl.* 677; *Willd.* 2. 982; *Woodv.* 2. 230. *t.* 83.
FOREIGN.—*Amandes douces et amares*, Fr.; *Mandarlo dolce et amare*, Ital.; *Almendro*, Span.; *Bittere ünd süsse Mandel*, Ger.; *Armandel boom*, Dutch; *Ba-da-mie Farsie*, Hind.; *Him ho gin*, Chinese; *Mindalnoe dervvo*, Russ.

THE Almond-tree is is a native of Syria, but is now completely naturalized in the south of Europe, and will even perfect its fruit in the most favourable parts of our island. In this country, however, it is raised chiefly on account of its being highly ornamental in shrubberies, plantations, and other descriptions of pleasure-grounds, from its coming into bloom early in the spring, before the leaves are expanded.

This tree rises to the height of about twenty feet, is much branched, and covered with a greyish bark. The leaves, which considerably resemble those of the peach, are three or four inches long, elliptical, petioled, narrow, pointed at each end, serrated,

with small glands at the base, and of a bright green colour. The flowers are in numerous pairs, sessile or on very short foot-stalks, varying in colour from rose-red to snow-white, and appear in March and April. The calyx is tubular, reddish externally, and divided at the margin into five blunt segments: the corolla consists of five ovate, concave petals, irregularly notched and waved at the edges, and inserted by narrow claws into the calyx; the filaments about thirty, cylindrical, unequal, shorter than the corolla, inserted into the calyx, and furnished with roundish orange-coloured anthers; the germen is downy at the base, with a short, simple style, supporting a round stigma. The fruit, as well as the leaves, resemble those of the peach-tree, a species of the same genus, or, as some declare, a variety of the same species, but is more flat, and instead of possessing the rich pulp of the latter, has a tough coriaceous covering, which opens spontaneously at the longitudinal furrow, when ripe. The kernel, which is the Almond of the shops, is inclosed in an oblong, flattish, brittle, spongy shell, of a brown colour, pointed at one end and composed of two cotyledons enveloped with a thin brown skin. Fig. *(a)* represents the pistil; *(b)* a portion of the calyx, showing the insertion of the stamens; *(c)* the front view of an anther magnified; *(d)* the back of an anther; *(e)* the shell; *(f)* the kernel, or almond.

The Almond-tree is common in China, and most parts of Asia, as well as in Barbary, where it is a native. In the south of France it is much cultivated, especially in Provence and Dauphinè, for the sake of the fruit, which is rarely matured in England. Cato termed almonds *Nuces Græcæ*, or Greek nuts, from which it is inferred that the tree was not cultivated in Italy, in his time. It appears, however, to have been known at a very remote period, and is mentioned by Hippocrates, Theophrastus, and other ancient authors. It was cultivated in England by Lobel previous to the year 1750; and is a great favourite in the shrubbery, blossoming sometimes as early as February, and forming a most enchanting harbinger of spring.

Of the Almond we have two sorts, the sweet and bitter, which are the produce of mere varieties of the same species, although

the fruits themselves differ so much in their sensible properties. The kinds of Almond chiefly cultivated for their fruit are, the common sweet Almond; the tender shelled; hard shelled; sweet Jordan; and bitter Almond.

"Sweet Almonds are imported in mats, casks, and cases: the bitter, which come chiefly from Magadore, arrive in boxes. When the Almond is not well preserved, it is preyed on by an insect that eats out the internal part; or, if this does not happen, the oil it contains is apt to become rancid."

QUATITIES AND CHEMICAL PROPERTIES.—The kernel of the fruit of the Sweet Almond is inodorous, and farinaceous, and contains a large proportion of oil, which is more pure, and less rancid, than olive oil.* M. Boullay's analysis is as follows:

Oil	54
Albumen	24
Sugar (fluid)	6
Fibre	4
Gum	3
Pellicles	5
Water	3 5
Acetic acid and loss	5
	100

Bitter Almonds yield less fixed oil (30—35 per cent.) and more albumen.

Previously to being used, Almonds are decorticated, or blanched, by putting them in boiling water.

"The *bitter almond* is also inodorous when entire, but when triturated with water, has the odour of the fresh blossom; and the taste is the pleasant bitter of the peach kernel." The ex-

* It is on account of this property that the oil of almonds is much used in perfumery, and in the composition of nostrums for the hair: thus *Macassar oil* consists merely of oil of almonds coloured red with alkanet root, and flavoured with oil of cassia: *Russia oil* is oil of almonds, rendered milky by the addition of a small portion of ammonia or potash, and scented, we believe, with oil of roses.

pressed oil of bitter almonds does not differ from that afforded by the sweet; both sorts are therefore used indiscriminately; but the remains of the former, after expression, retain all their peculiar virtues and bitterness. M. Vogel, in his experiments on, and analysis of the bitter Almonds, gives the following proportions of the substances in 100 parts:

Peelings . . .	8.5
Fixed oil	28
Albumen	30
Sugar	6.5
Gum	3
Parenchyma . . .	5
Essential oil and prussic acid	19

"Essential oil of bitter almonds is largely prepared for the use of perfumers, confectioners, and cooks, who generally use what is called the essence of almonds, or a solution of ʒij. of the oil in ʒvj. of alcohol; this is also the most convenient form for its pharmaceutical employment. One hundred weight of the bitter almond cake remaining in the press after the separation of the fixed oil, is put into the still with about four hundred gallons of water, this proportion being necessary to prevent the formation of a mucilaginous magma, from which the volatile oil will not pass, and which often, if brought to boil, rises up into the head and worm of the still. The produce of oil is liable to much variation, a cwt. of cake yielding from one ounce to two ounces and three-quarters by weight. It often deposits a considerable portion of white crystallized matter, which is apparently a distinct vegetable compound. The oil appears to be composed of hydrocyanic acid in union with volatile oil. This was proved by Mr. Hennel, of Apothecaries' Hall, who by digesting red oxide of mercury in it, obtained cyanuret of mercury, from which pure hydrocyanic acid was as usual procured by distilling it with muriatic acid."—BRANDE.

The *essential oil* is best obtained by distilling Almond-water with barytes, to separate the prussic acid. In close vessels it is very volatile; exposed to the air, it becomes solid, crystalline, inodorous, and of considerable fixity. The crystals are a compound of it with oxygen, for oxygen is absorbed during the fermentation, and if they are dissolved in hydro-sulphuret of ammonia, they are again decomposed, and the original odour and oil are produced. M. Robiquet, led by his own particular views of aroma, which are fully detailed in Vol. X. p. 109, of the Journal of Science, attributes the loss of odour to the loss of

ammonia; and its restoration to the ammonia, added in the hydro-sulphuret.

"With a view to illustrate the true cause of the phenomena, M. Robiquet lately experimented on this subject, He found, that instead of taking place in a few minutes, the crystallization sometimes required several days; and, in consequence, he was led to distil the oil, collecting the results in different portions. In this way he found, that the first portions underwent no change in contact with the air, but that the last portions crystallized immediately on exposure to it, or to oxygen, with absorption of the gas; whilst in nitrogen, hydrogen, carbonic acid, or in the Torricellian vacuum, no change took place.

"By further examination, it was ascertained that the most volatile portion of the oil contained nitrogen, as an element; for when boiled with solution of potash, it gave prussiate of potash, and when heated with oxide of copper, nitrogen. The less volatile and crystallizable parts contained no nitrogen; and when pure and in crystals, it was found that the odour of bitter almonds was not given to them by hydro-sulphuret of ammonia. The crystalline matter appears to be an acid substance; it reddens litmus; it is soluble in boiling water, and crystallizes by cooling; it is fusible, and readily volatile; it unites to alkalies, and appears to have no analogy with the oil from which it is derived.

"These two parts of the oil of bitter almonds, when examined as to their action on the animal economy, were found entirely different; the more volatile was excessively poisonous, but the crystallizable matter was quite inert. M. Robiquet, in considering the nature of the principle containing nitrogen, is inclined to consider it as different from prussic acid, though readily convertible into it. Fixed alkalies, for instance, exert no action on it when cold, though at high temperatures they readily form prussiates, and a crystalline substance very different from that already described. Another acid, and a resinous matter, is also found at the same time.

"M. Robiquet, in a note, considers the oil of the cherry laurel as identical with that of bitter almonds."—*Ann. de Chim.* xxi. 250.

Poisonous Effects. The noxious influence of the oil of bitter almonds has been long known, even as early as the time of Dioscorides, for he mentions that it was then employed for killing wolves; but until Bohm, a German chemist, ascertained the fact, it was not known that its poisonous properties depended upon the presence of hydrocyanic acid. The fact, however, that this oil does contain prussic acid is easily proved both by tests and also by Hennel's process already described. It will be seen, from the following interesting details, that the bitter almond, given in substance, is exceedingly poisonous, and the distilled water causes an action resembling that of laurel water,

producing vertigo, headache, dimness of sight, vomiting, and occasionally epilepsy.

"A cat, two months old, swallowed a drachm of bitter almonds pounded. In a short time after, it dragged along its hind legs, became paralytic, and experienced four attacks of epilepsy. In the evening, the respiration became panting, and it died. The stomach was red at its orifices, and contained mucus: the heart and auricles were filled with fluid blood; there was an effusion of blood throughout all the right side." —*Orfila.*

"Some pigeons were made to take somewhat less than a drachm of bitter almonds pounded; they walked about for a few minutes; but in a short time their crops and necks swelled out, their feathers became erect: at length they fell down as if epileptic; their heads were reflected upon the back; they remained motionless, and senseless, and soon expired. The œsophagus was found somewhat inflamed, very much dilated, and full of mucus; the duodenum contained chyle, viscid and yellow; the blood in the sub-axillary vessels was fluid, and of a vermilion colour; the cerebellum was distended with blood; the lungs appeared sound."—WEPFER, *De Cicuta aquatica*, pp. 239 and 241.

"Twenty bitter almonds, each of them cut into three pieces, were introduced at noon into the stomach of a small robust dog: the œsophagus was then tied. At the end of an hour and a half, the animal began to experience vertigoes, and weakness of the posterior extremities. He died at six in the evening. The *Dissection* took place an hour after. The animal was still warm; the heart no longer contracted, and contained a very small quantity of blood; the lungs were greyish, the stomach, which was sound, contained the fragments of the almonds, and exhaled a strong smell of prussic acid, whilst, before the ingestion, these seeds were devoid of smell; the duodenum was lined with a substance similar, for its texture and colour, to the yellow matter of the bile; no lesion was perceived in the digestive canal."—*Orfila.*

"One drop of the essential oil of bitter almonds," says Mr. Brodie, "was applied to the tongue of a young cat. She was instantly seized with violent convulsions; then lay on the side motionless, insensible, breathing in a horrid manner; the respirations became laboured, took place at longer and longer intervals, and at the end of five minutes from the application of the poison, had entirely ceased, and the animal was apparently dead; but on opening the thorax, the heart was found acting regularly eighty times in a minute, circulating dark-coloured blood, and it continued to act for six or seven minutes afterwards.

"I injected into the rectum of a cat half an ounce of water with two drops of the essential oil. In two minutes afterwards he was affected with symptoms, similar to those which occurred in the last experiment; and, at the end of five minutes from the injection of the poison, he was apparently dead. Two minutes after apparent death the heart was found acting eighty times in a minute. On *dissection* no preternatural appearances were found either in the internal membrane of the rectum or the brain. The symptoms produced by this poison, and the circumstance of the heart continuing to contract after apparent death, lead to the conclusion, that it occasions death by disturbing the functions of the brain.

"While engaged in these last experiments, I dipped the blunt end of a probe into the essential oil, and applied it to my tongue, meaning to taste it, and having no suspicion that so small a quantity could produce any of its specific effects on the nervous system; but scarcely had I applied it, when I experienced a very remarkable and unpleasant sensation, which I referred chiefly to the epigastric region, but the exact nature of which I cannot describe, because I know nothing precisely similar to it. At the same time there was a sense of weakness in my limbs, as if I had not the command of my muscles, and I thought that I was about to fall. However, these sensations were momentary, and I experienced no inconvenience whatever afterwards.

"From the instantaneousness with which these effects are produced, and from its acting more speedily when applied to the tongue, than when injected into the intestine, though the latter presents a better absorbing surface, we may conclude that this poison acts on the brain through the medium of the nerves, without being absorbed into the circulation."

From other experiments Mr. Brodie ascertained that the effects of the essential oil of almonds when applied to a wound, are not so instantaneous as when applied to the tongue; otherwise there is no difference in its effects, in whatever manner it is applied.

The symptoms attending the action of this poison are marked, and in some respects peculiar. They are thus enumerated by Dr. Granville in his Treatise on Prussic Acid:—"Stupor and numbness, with oppression and a sense of weight at the summit of the head; yawning and an irresistible disposition to sleep; vertigo and dizziness of sight. All, or any of these preliminary symptoms, according to the quantity of the poison taken, are generally observed by the practitioner, if sent for in time. The pulse is found to be rather strong at first, but flags soon after, and becomes either frequent, wiry, and small, or slow and vibrating. A paralytic state of the extremities is next remarked. The pupil remains unalterably dilated; the excitability of the organs of sense is greatly diminished. Every animal function seems impaired, except respiration, which is very seldom, indeed, accelerated or difficult. (?) Vomiting and hiccup shortly precede the aggravation of every nervous symptom, when life ebbs fast and becomes soon extinct."

In the fifty-seventh volume of the London Medical and Physical Journal, there is an interesting case of poisoning with bitter

almonds, recorded by Mr. Kennedy. The person, a stout labourer, appeared to have eaten a great quantity of bitter almonds, which were subsequently found in the stomach. He was seen to drop down while standing near a wall; soon after which the surgeon, who was sent for, found him quite insensible, with the pulse imperceptible, and the breath exhaling the odour of bitter almonds; and death very shortly took place. Coullon has noticed many other instances where alarming symptoms were produced by this poison, but which were dissipated by the supervention of vomiting. Several other fatal cases are also on record, and more will probably occur, since this oil, a composition containing prussic acid, is sold too freely by druggists under the name of *peach-nut* oil. Indeed, Christison mentions a fatal case which occurred lately in London, where the individual, intending to compound a nostrum for worms, got by mistake from the druggist's, *peach-nut*, instead of, as he wanted, beech-nut oil. Metzdorf also mentions a case, in which ʒij of this oil were swallowed by a hypochondriacal gentleman forty-eight years of age. A few minutes after, his servant, whom he sent for, found him lying in bed with his features spasmodically contracted, his eyes fixed, staring, and turned upwards, and his chest heaving convulsively and hurriedly. A physician, who entered the room twenty minutes after the draft had been taken, found him quite insensible, the pupils immoveable, the breathing stentorious and slow, the pulse feeble and only thirty in a minute, and the breath exhaling strongly the odour of bitter almonds. Death ensued ten minutes afterwards.—*Journ. Complémentaire*, &c. xvii. 366. CHRISTISON.

Dioscorides, Fœnisius, Matthiolus, Tabernæmontanus, Vicat, and others, narrate instances of foxes, squirrels, fowls, cranes, ducks, canary-birds, and weazles, being killed by bitter almonds.

TREATMENT.—Ammonia has lately been recommended to be administered when prussic acid has been taken in too large doses. Chlorine in solution has also been mentioned as an antidote. Further evidence is wanted to establish their claim to public

confidence. This subject has, however, been most ably discussed in all its bearings by Christison, from whose work on Poisons the following are extracts.

"Much attention has been paid to the treatment of this variety of poisoning, and the object of those who have studied it has naturally been the discovery of an antidote. If it is true that hydrocyanic acid acts energetically in all its chemical combinations, and especially when united with alkalis, it is plain that no substance can perform the part of a chemical antidote, and, consequently, that if an antidote exists at all, it must operate by exciting, in the body, an action contrary to that of the poison. Hence, substances destitute of a rapid and powerful action on the system, such as oil, milk, soup, coffee, treacle, turpentine, and the like, have been found inert; and, on the whole, the only remedies which appear to promise any material advantage, have been the powerful and diffusible stimulants. Of these, ammonia is considered by many the most energetic antidote. The first person who made careful experiments with it was Mr. John Murray, of London. After ascertaining the quantity requisite to kill an animal with certainty, he administered a fatal dose, and soon afterwards applied ammonia assiduously to the nostrils of the animal, and he was so much struck with the beneficial effects, that he expressed himself ready to swallow a dose of the acid, large enough to prove fatal, provided a skilful person were beside him to administer the antidote.* The favourable results obtained by Murray were afterwards confirmed by M. Dupuy, who found that when a horse had been twenty-five minutes under the influence of hydrocyanic acid, and appeared about to perish, a drachm of carbonate of ammonia injected into the jugular vein, restored it to health in a few minutes.† Afterwards, however, the efficacy of ammonia was called in question. Orfila stated in the third edition of his Toxicology, that he had several times satisfied himself of the complete inutility of these as well as of many other antidotes.‡ And Dr. Herbst, of Gottingen, recently made some careful experiments, from which he concludes, that although ammonia is useful when the dose of the poison is not large enough to kill, and will even make an animal that has taken a fatal dose jump up and run about for a little, yet it will never save its life.§ But farther experiments were made more lately by Orfila, who has in consequence been led to modify his former statement, and to admit, that although liquid ammonia is of no use when introduced into the stomach, yet if the vapour from it is inhaled, life may sometimes be preserved, provided the dose of the poison be not large enough to act with great rapidity. He remarked, that when from eight to fourteen drops of the medicinal acid were given to dogs of various sizes, they died in the course of fifteen minutes, if left without assistance, but were sometimes saved by being made to inhale ammoniacal water, and recovered completely in a little more than an hour.‖ As this is very nearly the conclusion to which Mr. Murray was led by his ex-

* Edin. Philosoph. Journal, vii. 124, and Edin. Journal of Science, ii. 214.
† Archives Gen. de Med. xi. 30.
‡ Toxicologie Generale, ii. 167.
§ Archiv. für Anatomie und Physiologie, 1828, p. 208.
‖ Annales d'Hyg. Publ. et de Med. Leg. i. 511.

periments, performed in 1822, the latter gentleman is entitled to the entire merit of discovering the remedy. These experiments cannot have attracted in France the attention which they deserve, otherwise Mr. Murray's claim would have been recognised by Professor Orfila. Buchner, it is right to add, had found this remedy useful in the year in which Mr. Murray's experiments were made.* Orfila suggests a very important caution, not to use a strong ammoniacal liquor, otherwise the mouth, air passages, and even the alimentary canal, may be attacked with inflammation, as, indeed, happened to a French physician, whose case is on record. The strong aqua ammonia should be diluted with twelve parts of water. Another remedy of the same kind with ammonia, as to action, is chlorine. This substance was first proposed as a remedy, in 1822, by Riauz, a chemist of Ulm, who found that when a pigeon was on the point of expiring, after breathing the vapour of hydrocyanic acid, it immediately began to revive, on being made to breathe chlorine, and that in fifteen minutes it was able to fly away.† Buchner repeated Riauz's experiments, and arrived at the same results. More lately, M. Simeon, apothecary to the hospital of St. Louis, at Paris, apparently without being acquainted with the observations of the German chemists, was likewise led to suppose that this gas might prove a useful antidote;‡ and M. M. Cottereau and Vallette have formed the same conclusion.§ Orfila, in his paper already quoted, examines the merit of this remedy with great care, and infers that it is the most powerful antidote of all that have been proposed. His experiments have convinced him that animals, which have taken a dose of poison sufficient to kill them in fifteen or eighteen minutes, will be saved by inspiring water impregnated with a fourth part of its volume of chlorine, even although the application of the remedy be delayed till the poison has operated for four or five minutes. In some of his experiments he waited till the convulsive stage of the poisoning was passed, and the stage of flaccidity and insensibility had supervened; yet the animals were obviously out of danger ten minutes after the chlorine was first applied, and recovered entirely in three quarters of an hour.‖ The last remedy which deserves notice is the cold affusion. This was first recommended by Dr. Herbst, of Gottingen, who, on account of the success he witnessed from it in animals, considers it the best remedy yet proposed. When the dose of the poison was insufficient to prove fatal in ordinary circumstances, two affusions he found commonly sufficient to dispel every unpleasant symptom. When the dose was larger, it was necessary to repeat the affusion more frequently. Its efficacy was always most certain when it was resorted to before the convulsive stage of the poisoning was over; yet even in the stage of insensibility and paralysis it was sometimes employed with success. In the latter instance the first sign of amendment was renewal of the spasm of the muscles. Many experiments are related by the author in support of these statements. But the most decisive is the following. Two poodles, of the same size, being selected, the hydrocyanic acid was given

* Repertorium fur die Pharmacie, xii. 144.
† Ibid. xii. 141.
‡ Ibid. xii. 144.
§ London Med. and Surg. Journal, iii. 58.
‖ Annales d'Hyg. Publ. et de Med. i. 525.

to one of them in repeated small doses till he died. The whole quantity administered being seven grains of Illner's acid, this dose was given at once to the other dog. Immediately it fell down in convulsions, violent opisthotonos ensued, and in half a minute the convulsive stage was followed by flaccidity, imperceptible respiration, and failing pulse. The cold affusion was immediately resorted to, but at first without any amendment. After the second affusion, however, the opisthotonos returned, and was accompanied by cries; and on the remedy being repeated every fifteen minutes, the breathing gradually become easier and easier, the spasms abated, and in a few hours the animal was quite well.*

"Professor Orfila has repeated Dr. Herbst's experiments, and obtained analogous results. He considers the cold affusion, however, to be inferior in power to chlorine.† On the whole, then, it appears that the proper treatment of a case of poisoning with hydrocyanic acid consists in the use of the cold affusion, and the inhalation of diluted ammonia or chlorine; and as chlorine will hardly ever be at hand, ammonia will commonly be employed. Venesection is also probably indicated by the signs of congestion in the head.

"It is right to remember, that on account of the dreadful rapidity of this variety of poisoning, it will rarely be in the physician's power to resort to any treatment soon enough for success; and, further, that his chance of success must generally be feeble, even when the case is taken in time, because when hydrocyanic acid is swallowed by man, the dose is commonly so large as not to be counteracted by any remedies."

Medical Properties and Uses.—Almonds are demulcent, and the expressed oil is sometimes converted into an emulsion, by triturating it with mucilage and sugar, and gradually adding distilled water; the diffusion is, however, not very perfect, but a combination more complete and permanent is effected, by adding a few drops either of liquor ammonia, of liquor potassæ, or a few grains of the subcarbonate of potass, to the oil, swimming on the water, and without the mucilage. A more elegant emulsion is produced by the confection of almonds, which forms a useful vehicle for tincture of squills or of opium; and is advantageously administered for tickling coughs, for irritation of the urinary organs, especially if produced by blisters, and likewise for common drink, where the mucous membrane of the stomach has been irritated by corrosive poisons. By triturating camphor and the resins with almonds, they are rendered miscible with water. Sweet almonds, when fresh and free from rancidity, are much used as an article of diet, and when taken in moderate quantities are sufficiently nutritive and wholesome.

* Archiv. fur Anatomie und Physiologie, 1828, p. 208.
† Annales d'Hyg. Publ. et de Med. Leg. i. 518.

Six or eight blanched almonds relieve heartburn; yet too freely indulged in, they are of difficult solution and digestion, and are very apt to disagree. They occasionally bring on an attack of urticaria febrilis; indeed, so powerful is this effect on one of our pupils, that three or four produce that disease in a most marked and violent manner; his whole skin being covered with weals. The late Dr. Gregory was also subject to be affected in the same way.

In catarrh and chronic cough, small doses of prussic acid prove eminently useful; and hence by some it has been extolled as almost a specific in consumption. It will often relieve some of the more distressing symptoms, and hence is serviceable as affording temporary comfort. In various painful diseases of the skin, as *impetigo*, a lotion, containing ʒij of the acid to ℥viii of water, with a little alcohol and acetate of lead, has been found by Dr. Thompson to be very beneficial. And in *prurigo*, inveterate psoriasis and other cutaneous affections, attended with severe itching and tingling, he says it has rarely failed to afford equal comfort to the patient.

Bitter Almonds have been extolled by Bergius as a remedy for intermittent fever, when mixed with decoction of bark, and he says, "Sed vidi subinde febres protractas, multis recidivis molestas, et quæ chinchinam penitus eluserant, sola tandem emulsione amara curatas." Dr. Mylius, of Russia, has successfully administered, for the same disease, from a drachm and a half, to two drachms, formed into an emulsion with three ounces of water. An emetic was first prescribed, and the dose given one hour before the accession of the fit. Out of twenty-seven subjects labouring under quotidian, and quartan fevers, two were cured after the second dose; four after the third; nine after the fourth; four after the fifth; four after the sixth; two after the seventh; one after the eleventh; and one after the twelfth. They suffered neither relapse, nor consecutive disease; and the effects are attributed to the prussic acid they contain.* On account of the same property, pulmonary, and dyspeptic symptoms,

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* Russische Samnlung dur Naturweissen-schaft, &c.

have been benefited by them in our own practice; and obstinate chronic eruptive diseases sometimes yield to their external application in the form of emulsion, to which quacks frequently add the oxymuriate of mercury.* Like the sweet almond, they occasionally produce *urticaria*, if taken in the smallest quantity. Plutarch mentions a great drinker of wine, who by their use escaped intoxication; the modern Italians sometimes eat them for the same purpose; and it is said that the Egyptians purify the muddy water of the Nile, by putting it into jars, rubbed inside with a paste composed of them. At the Cape of Good Hope, the wood of the almond-tree is made into lasts and heels for shoes.

OFF: PREP.—Oleum Amygdalæ. *L. E. D.*
Emulsio Amygdalæ Comp. *E. D.*
Emulsio Acaciæ Arabicæ. *E. D.*
Emulsio Camphoræ. *E.*
Confectio Amygdalarum. *L.*

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* The nostrums for eruptions and cutaneous diseases, sold under the title of *Gowland's Lotion, Milk of Roses, Caledonian Cream, Kalydor*, &c., consist merely of a solution of the oxymuriate of mercury in almond emulsion, with a proportion of sugar of lead, or white oxyde of bismuth. They are thus possessed of certain stimulant and repellant properties, and though blunted in part by the medium in which they are involved, cannot fail to be highly active on the skin, and consequently oftentimes injurious.

Capsicum annuum.

CAPSICUM ANNUUM.

Annual Capsicum, or Guinea Pepper.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. LURIDÆ, *Lin.* SOLANEÆ, *Juss.* SOLANACEÆ, *Burn.*

GEN. CHAR. *Corolla* wheel-shaped. *Berry* juiceless, with 2-cells.

SPEC. CHAR. *Stem* herbaceous. *Peduncles*, solitary smooth. *Fruit* oblong.

Syn.—Piper Indicum vulgatissimum. *Bauh. Pin.* 102; *Raii. Hist.* 676.
Piper Calecutium sive Capsicum oblongius, *Bauh. Hist. v.* 2. 943.
Capsicum longioribus siliquis, *Ger. Em.* 364.
Capsicum majus vulgatius, oblongis siliquis, *Park. Theatr.* 355.
Vallia-capo-molago, *Rheede Malab.* ii. *t.* 35.
Piper Indicum vulgatissimum, *Murr. App. Med.* i. 475.
Capsicum annuum, *Lin. Sp. Pl.* 270; *Willd.* i. 1050; *Hort. Kew.* i. 253; *Woodv.* 391. *t.* 144; *Stokes*, i. 408.
FOREIGN.—*Poivre d'Inde*, Fr.; *Pepperone*, Ital.; *Pimentero*, Span.; *Pimentao*, Port.; *Spanischer oder Türkischer Pfeffer*, Ger.; *Spaenischepeper*, Dutch; *Perez*, Russ.; *L'ul Mirch*, Hind.

GUINEA PEPPER grows naturally in both the Indies. It appears to have been long known in this country, being mentioned by Gerarde; but the date of its introduction has not been precisely ascertained. It is frequently cultivated in our gardens as an ornamental plant, and also for the sake of the young pods or berries, which make a favourite pickle. The flowers appear at the same time with the fruit, and are produced from July to September.

The plant rises two feet high; is herbaceous, crooked, much branched, and has a smooth striated, somewhat angular stem.

The leaves are ovate, acuminate, smooth, entire, of a dark green colour, and stand irregularly on long foot-stalks. The flowers are solitary, petioled, proceed from the axillæ of the leaves, and of a dirty white colour: the calyx is persistent, tubular, and divided into five short segments; the corolla is synpetalous, wheel-shaped, consisting of a short tube, divided at the limb into five segments, which are spreading, pointed, and bent inwards at the margin: the filaments are five, shorter than the corolla, with oblong anthers; the germen is ovate, surmounted by a slender style, which is longer than the filaments, and terminated by a blunt stigma. The fruit is a long pendulous inflated pod or berry, smooth, shining, of a crimson or yellow colour, two-celled, containing a whitish spongy pulp, and numerous flat kidney-shaped seeds. Fig. (*a*) represents the germen and pistil; (*b*) the corolla spread open to show the insertion of the stamens into the petals.

This species of capsicum varies greatly in the size, form, and colour of its berries. In some instances they are long and conical, or short and obtuse; in others, heart-shaped, bell-shaped, or angular; they vary also in colour, being generally of a bright red, but sometimes orange or yellow.

The generic name, Capsicum, is supposed to be derived from καπτω, to bite, on account of the pungency of the fruit; or from *capsa*, a chest, in allusion to the form and structure of the pericarp.

Economical Uses.—All the species yield a spice of the most pungent quality, but the well-known condiment sold under the name of Cayenne Pepper is prepared from the fruit of the Capsicum baccatum, or Bird-pepper, which is a shrubby plant, of humble growth, not unlike the present species, but producing small ovate berries. These are gathered when ripe, and dried in the sun, pounded, and mixed with salt. The composition is then put into stopped bottles, and is commonly known by the name of "Cayan Butter."

A mixture of sliced cucumbers, eschalots or onions, cut very small; a little lime juice, or madeira wine; with a few pods of bird-pepper well mashed and mixed with the liquor, seldom fails

to excite the most languid appetite in the West Indies, where it is called *man-dram*. A useful and elegant condiment is made by dissolving common salt in a strong infusion of capsicum, previously strained, and afterwards allowing it to crystallize.

CULTURE.—The annual capsicums are propagated by seeds, which must be sown upon a hot-bed in the spring; and when the plants have six leaves, they should be transplanted on another hot-bed, at four or five inches distance, shading them in the daytime from the sun until they have taken root, after which they must have air freely admitted to them in warm weather, to prevent their running up weak. Towards the end of May, the plants must be hardened, by degrees, to bear the open air; and in June must be carefully taken up; preserving as much earth about their roots as possible; planting them into borders of rich earth; observing to water them well, and shading them till they have taken root; after which time, they will require no other management, but to be kept free from weeds, and in very dry seasons to refresh them three or four times a week with water. They will flower the end of June and July, and their fruit ripens in autumn.

QUALITIES AND CHEMICAL PROPERTIES.—Capsicum is of a fiery hot, somewhat aromatic taste, and has an extremely pungent odour. These properties are partially yielded to water, but more completely to æther and spirit. It contains cinchonin, resin, mucilage, and an alkaline principle discovered by M. Forchhammer, which is extremely acrid, more soluble in water, and has a greater capacity of saturation than the other vegetable alkalies. It forms a triple salt with the protoxide of lead and muriatic acid, which is as acrid as the alkali itself.* Precipitates are produced in the infusion of capsicum, by infusion of galls; nitrate of silver; oxymuriate of mercury; acetate of lead; the sulphates of iron, copper, and zinc; ammonia, carbonate of potass, and alum: but not by sulphuric, nitric, or muriatic acid.

ADULTERATIONS.—Red lead, which is sometimes mixed with powdered capsicum, may be detected by digesting it in acetic acid, and adding to the solution sulphuret of ammonia, which will produce, if any lead be present, a dark-coloured precipitate; or the fraud may be discovered by boiling some of the suspected pepper in vinegar, and after filtering the solution, adding to it sulphate of soda, when a white precipitate will be formed, which, after being dried and exposed to heat, and mixed with a little charcoal, will yield a metallic globule of lead.†

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* Journal de Physique, 1820, p. 173.
† Accum; Thompson.

Medical Properties and Uses.—Capsicum is a powerful stimulant, and is most advantageously given in atonic gout, in palsy, tympanites, dropsy, and in the debilitated stages of fever. From five to ten grains, in a pill, is the usual mode of administration; and although it is the hottest of all the peppers, it has but little tendency to affect the head: it is therefore a useful stimulant in dyspepsia, and is an admirable carminative for flatulency from vegetable food. It may be advantageously combined with steel in scrofulous constitutions, and is much used as an adjunct to cinchona bark for intermittents. "Its sensible effects are heat in the stomach, and a general glow all over the body, without much affecting the pulse; and as a gargle it cleans, without impeding the healing of the ulcers of the fauces." A weak infusion is a useful stimulant to scrofulous and fistulous ulcerations: the pods are sometimes employed as an ingredient in rubefacient cataplasms for the feet, to relieve the coma of fever; chronic ophthalmia is sometimes benefited by a weak infusion; but the gargle, when applied to cynanche, has occasionally produced violent inflammation, not easy to be controlled.

Dose.—From twelve drops to half a drachm: and ʒij, to half a pint of water, form a good gargle.

Off. Prep.—Tinctura Capsici. *L. D.*

*** Rymer's Cardiac Tincture is said to be composed of an infusion of capsicum, camphor, cardamon seeds, rhubarb, aloes, and castor in proof spirit, with a very small quantity of sulphuric acid.

MENTHA PIPERITA.

Pepper Mint.

Class XIV. DIDYNAMIA.—*Order* I. GYMNOSPERMIA.

Nat. Ord. VERTICILLATÆ, *Lin.* LABIATÆ, *Juss.* LABIATIFLORÆ, LABIATÆ, *Bartling.*

GEN. CHAR. *Corolla* monopetalous, not quite equal, 4-lobed. *Stamens* erect, spreading.

SPEC. CHAR. *Thyrsi Spiciform* blunt, interrupted below. *Leaves* stalked, ovate, smoothish. *Calyx* very smooth at the base.

Syn.—Mentha spicis brevioribus, &c. *Raii. Syn.* ed. 3. 234. t. 10. f. 2.
Mentha aquatica sive Sisymbrium, *Bauh. Hist.* v. 3. p. 2. 223. f.
Mentha piperita officinalis, *Sole Mentk. Br.* 15. t. 7.
Mentha piperita, *Willd. Sp. Pl.* v. 3. 79; *Smith Tr. of Lin. Soc.* v. 5. 189; *Fl. Brit.* 613; *Eng. Bot.* v. 10. t. 687; *Woodv.* t. 169; *Stokes*, v. 3. 317.
FOREIGN.—*Menthe poivrée*, Fr.; *Mentha piperita*, It.; *Ofeffermünze*, Ger.

SEVERAL species of Mint are cultivated for medicinal and culinary uses. Of these the most important are Pepper Mint, *Mentha piperita*; Spearmint, M. *viridis*; and Penny-royal, M. *Pulegium*. They are all of them indigenous to Britain, and hardy perennials; well worthy the attention of those who love to look into flowery hedges,

> "Or into the meadows, where
> Mints perfume the gentle aire,
> And where Flora spreads her treasure."

Pepper Mint grows wild in some parts of Britain, in watery places, and on the banks of streams, flowering in August and September; but it is not a common native plant. There are three varieties of this species; but the variety *a*, of Smith's "English Flora," is the one generally employed in medicine. The

specimen figured was obtained from Mitcham in Surrey, where considerably more than one hundred acres of this herb are cultivated for the supply of the London market.

From a creeping rhizoma arises a stalk that is nearly erect, quadrangular, branched, and generally of a purplish colour, with short recurved hairs, to the height of two or three feet. The leaves stand opposite, on short footstalks, are of a dark green colour, ovate, serrated, acute, varying in breadth, smooth and shining above, and paler, with white and purple veins beneath; the leaves are never downy, but the middle rib, on the under side, is beset with short hairs. The spike-like thyrsus of flowers is solitary, bluntish, terminal, about the length of the leaves, interrupted and leafy below, with the lowest axillary cymes more distant, and sometimes spiked. The bracteas are lanceolate and fringed. The flower-stalks are either perfectly smooth, or very slightly hairy above. The calyx is slender, furrowed, covered with pellucid dots; the base quite smooth, and five-cleft, with the teeth dark purple and fringed. The corolla is funnel-shaped, longer than the calyx, and of a purplish colour. The filaments are awl-shaped, straight, and shorter than the limb. The germen is four-lobed, superior, with a slender style, longer than the corolla, and terminated with a bifid stigma. Fig. (*e*) represents the calyx and pistil; (*f*) the corolla, with the stamens.

In external appearance, Pepper Mint corresponds with *Mentha viridis*, for which it may easily be mistaken; but in that the leaves are sessile, and narrower in proportion to their length; the thyrsi are longer, and composed of more cymes. "England," says Sir J. E. Smith, "has already been known as the country of the true M. *piperita*. What supplies its place in the north of Europe, is merely a variety of M. *hirsuta*, having a similar odour; and this is named *piperita* in the Linnæan herbarium." Two varieties, a narrow-leaved and a broad-leaved, are cultivated in gardens, and some variegated kinds are considered as ornamental plants, particularly a reddish variety called Orange Mint.

MENTHA VIRIDIS.—*Spear Mint.*

SPEC. CHAR. *Spiciform thyrsi* interrupted. *Leaves* sessile, lanceolate, acute, naked. *Bracteas* bristle-shaped, somewhat hairy, as well as the teeth of the calyx. *Flower-stalks* smooth.

Syn.—Mentha, *Camer. Epit.* 477. *f.*
Mentha romana, *Ger. Em.* 680. *f.*
Mentha hortensis tertia, *Fusch. Hist.* 290. *f.*
Mentha romana officinarum, sive prestantior angustifolia, *Lob. Ic.* 507. *f.*; *Moris. v.* 3. 367. *sect.* 11. *t.* 6. *f.* 1.
Mentha viridis, *Lin. Sp. Pl.* 804; *Willd. v.* 3. 67; *Smith Tr. Lin. Soc. v.* 5. 185; *Fl. Brit.* 612; *Eng. Bot. v.* 34. *t.* 2424; *Sole Menth.* 11. *t.* 5; *Woodv, t.* 170; *Stokes, v.* 311.
FOREIGN.—*Baume verte*, Fr.; *Menta Romana*, It.; *Menta*, Sp.; *Frauenminze*, Ger.

SPEAR-MINT grows naturally in marshy places, and by the banks of rivers; but is more rarely met with in this state than the preceding species. It was found many years ago by Hudson, on the banks of the Thames, and Mr. Sole mentions it as growing on a common between Glastonbury and Wells, in a meadow four miles from Bath, and in many places on the banks of the Avon. It produces its flowers in August.

From a rhizoma resembling that of the preceding species, rises a stem that is erect, branched, acutely angular, smooth, sometimes purplish, to the height of two or three feet. The leaves are of a lively green colour, about two inches and a half long, and an inch broad, lanceolate, nearly sessile, opposite, and sometimes a little hairy underneath. The stems and branches are terminated by long panicled, acute spiciform thyrsi, the axillary cymes of which are mostly a little remote, and furnished with narrow lanceolate bracteas; the flower-stalks are smooth and polished; the calyx is bell-shaped, generally smooth, having five nearly equal teeth, and sprinkled like the foliage with minute resinous dots; the corolla is funnel-shaped, smooth, and of a light purple colour; the stamens are generally shorter than the co-

formed by dissolving a small quantity in alcohol. Mr. Neill says, "the young leaves and tops of spear-mint are a good deal used in spring salads in England; they also form an ingredient in soups, or are more frequently employed to give flavour, being boiled for a time and withdrawn. They are also shredded down, and mixed with sugar and vinegar, as a sauce to roasted meat, particularly lamb."

Off. Prep.—Aqua Menthæ Piperitæ. *L. E. D.*
Oleum Menthæ Piperitæ. *L. E. D.*
Spiritus Menthæ Piperitæ. *L. E.*
Infusum Menthæ Compositum. *D.*

Spear-mint and *Penny-royal* resemble the Peppermint in their qualities, but are less pungent.

Spear-mint is used for culinary purposes, and gives out its virtues both to water and alcohol: an essential oil is also obtained from it.

Off. Prep.—Aqua Menthæ viridis. *L. E.* sativæ, *D.*
Oleum Menthæ viridis. *L. D.*
Spiritus Menthæ viridis. *L.*
Infusum Menthæ Compositum. *D.*

The directions for this infusion are; "Take of the leaves of Spear-mint dried, two drachms; boiling-water, as much as is sufficient to afford six ounces of infusion when strained. Digest for half an hour in a covered vessel; strain the liquor when cold, and add to it, of refined sugar two drachms; oil of Spear-mint, three drops, dissolved in half an ounce of compound tincture of cardamoms." It is a grateful stomachic, which may be used to obviate flatulence; or as a vehicle to cover the taste of unpleasant medicines. The infusions of the mints in warm water are more grateful stomachics than the ordinary cold distilled waters.

Penny-royal yields an essential oil containing a small portion of camphor. It was formerly used as an emmenagogue; and although it possesses no such virtues, the Aqua Pulegii, known by the name of "hysteric water," is still much employed by the vulgar, to remove uterine obstructions. Like the other mints it is a carminative stimulant, but is seldom prescribed by medical practitioners.

Off. Prep.—Aqua Pulegii. *L. E. D.*
Oleum Pulegii. *L. D.*
Spiritus Pulegii. *L.*

Convolvulus Jalapa.

W. Clark del. et fecit

CONVOLVULUS JALAPA.

Mexican or Jalap Bindweed.

GEN. CHAR. &c. See *Convolvulus sepium.*

SPEC. CHAR. *Leaves* ovate, somewhat cordate, obtuse, obsoletely repand, villous underneath.

Syn.—Convolvulus americanus, Jalapium dictus, *Raii Hist. v.* 1. 724.
Bryonia Mechoacana nigricans, *Bauh. Pin.* 298.
Cacamotle Tlanoquiloni, seu Batata purgantia, *Hernand. Mexic.* 229. *cap.* 54.
Convolvulus foliis variis, pedunculis unifloris, radice tuberosa, *Mill. Dict. ed* 8. *n.* 31.
Ipomœa Jalapa, *Pursh. Amer. Sept.* 1. 146; *Bot. Regist. v.* 8. 342.
Jalapa; flore rosso, foliis sepius integris convolvulus Jalapa, *Lin. Mant.* 42. *ejusd. Mat. Med.* 60.
Convolvulus Jalapa, *Hort. Kew.* 1. 211. *ed* 2. 1. 332; *Wild. Sp. Pl.* 1. 860; *Curt. Magazin.* 1572; *Woodv. t.* 21; *Stokes, v.* 1. 313.
ETYMOLOGY.—*Jalap, Fr.*; *Scialappa*, It.; *Jalapa*, Sp. *Jalappenhurt, Ger.*

THE Convolvulus (or Ipomœa) Jalapa is a native of Mexico, and is the produce of the temperate region, principally in the neighbourhood of Xalapa, and hence its appellation. It abounds on the eastern slope of the Cordillera of Anahuac, between the 12° and 20° of latitude, and in the same region is procured the vanilla and sarsaparilla. From 200,000 to 300,000 pounds are annually exported from Vera Cruz. Although the root forms a well-known and valuable cathartic, which is perhaps more generally employed than any other of vegetable origin, and was brought to Europe in 1609 or 1610, it was not till of late that the genus of the plant to which it belongs was accurately ascertained; and even now there is a doubt as to whether the old genus convolvulus should be retained entire, or whether it should not be subdivided, and C. sepium be called *Calystegia*, and C. Jalapa be referred to Ipomœa. As the College of Physicians call it Convolvulus, that name is here preferred. The plants seems to have been first introduced into Europe by Dr. Houstoun, and communicated to Miller, before the year 1733. Our figure was

taken from a fine specimen which flowered in the garden belonging to the Society of Apothecaries at Chelsea. In its wild state, the plant delights in a dry sandy soil, and blossoms in August and September.

The root is perennial, large, of an irregular oblong shape; externally blackish, and when fresh abounding with a milky juice. The stems are numerous, herbaceous, slender, twining, like those of C. *sepium*, round any support, striated, and rise to the height of eight or ten feet. The leaves vary very much in shape; they are petiolated, obsoletely serrated, smooth on the upper surface, and hoary or tomentose underneath; the lower ones are generally more or less heart-shaped, but often lobed, as represented in the plate; the upper ones more oblong and acute. The flowers are large, bell-shaped, plaited, entire, and stand upon short axillary peduncles, each bearing one or more flowers of a rose-colour externally, and a dark purple within; the calyx consists of five oval, concave, pale green leaves; the anthers are of a pale yellow colour, large, oblong, and tapering; the filaments, which do not protrude beyond the tube, are slender, varying in length, covered at the base with short purple hairs, and inserted into the corolla. The germen is oval, supporting a slender style, crowned with a roundish stigma. The seeds are said to be covered with a very white cottony down. Fig. (*a*) represents the stamens, showing their insertion into the corolla; (*b*) the pistil; (*c*) a lower leaf in outline.

Qualities and Chemical Properties.—The dried root of Jalap is imported in thin transverse slices, and in round masses; it is solid, hard, and heavy; of a dark grey colour, and striated appearance. The best comes from Vera Cruz. It has a sickly smell, and a sweetish, sub-acrid, nauseous taste. Powdered, it is of a pale yellow brown colour. Proof spirit is its proper menstruum. When dear, it is often adulterated with scammony, or gamboge—if with briony root, the powder is of a paler colour, and it burns less readily when applied to the flame of a candle. Even two parts of black resin are sometimes mixed with one of Jalap, "but this may be known by putting the

powder into rectified spirit, which will dissolve the resin of the Jalap, but not touch the other." By M. Henry's analysis, the constituents of three varieties of Jalap are—

	Jal. leger.	Jal. sain.	Jal. pique.
Resin . . .	60	48	72
Extract . . .	75	140	125
Starch . . .	95	102	103
Woody-fibre .	270	210	200
	500	500	500

Jalapine or *Jalapia*.—Mr. Hume, jun. of Long Acre, is said to have discovered a vegeto-alkaline principle in Jalap, and proposes to call it *Jalapine*. It is procured in the following manner. Coarsely powdered jalap is macerated for twelve or fourteen days, in strong acetic acid; a highly coloured tincture is thus obtained, which, when filtered, is to be supersaturated with ammonia, and this must be violently shaken; a sabulous deposit will fall rapidly, and a few crystals will form on the sides of the vessel. The deposit and crystals are to be collected, and washed with distilled water, again dissolved in a small quantity of concentrated acetic acid, and reprecipitated by ammonia added in excess, which throws down the jalapine in small white acicular crystals.

Jalapine is without any perceptible taste or smell, and seems to be heavier than morphia, quinia, or other substances of this class; it is scarcely soluble in cold water, and only to a small extent in hot water; ether has no effect upon it; alcohol is its proper solvent. Very little trouble is requisite to purify jalapine from extractive or colouring matter, for which it appears to have but a slight affinity.

Mr. Hume has not made many experiments upon this substance, but thinks that about one ounce of jalap will, on careful treatment, afford about five grains of the substance.

Medical Properties and Uses.—Jalap is an active purgative, and one on which we can rely. It produces copious evacuations from the small and large intestines, and would be administered much oftener, were it not for the griping and distressing nausea that often arise from it. It is, notwithstanding, a safe medicine, and combined with other purgatives, has been proved by Dr. James Hamilton to be of eminent use in typhus, scarlatina, cynanche maligna, marasmus, chorea and tetanus. Added to the supertartrate of potass, it produces copious watery evacuations; and an increased secretion of urine generally accompanies these alvine discharges: indeed, by a judicious and

persevering use of this preparation, which by the Edinburgh College is termed the "Compound powder of Jalap," it is astonishing how much good has been effected in dropsical cases. A watery extract is ordered by the Dublin pharmacopœia, which is said to purge moderately without griping, and is therefore well adapted for children. Both the London and Edinburgh Colleges order an alcoholic extract, which is generally so carelessly prepared that no reliance can be placed on it; but when good, it is a more active preparation than the former, exerting its effects in doses of ten or twelve grains. Jalap is best given in substance, in doses, from ten grains to half a drachm, combined with a drop or two of any essential oil. The preparations are seldom prescribed.

Off. Prep.—Pulv. Jalapæ Comp. Ed.

Dose, two drachms.

	L. E. D.
Extractum Jalapæ.	*L. E. D.*
Tinctura Jalapæ.	*L. E. D.*
Tinctura Sennæ Comp.	*E.*

Styrax officinale.

STYRAX OFFICINALE.

The Officinal Storax-tree.

Class X. DECANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. BICORNES, *Lin.* GUACIANÆ, *Juss.*
STYRACINÆ, STYRACEÆ, *Bartl.*

GEN. CHAR. *Calyx* inferior, pitcher-shaped. *Corolla* funnel-shaped. *Stigma* simple. *Drupe* coriaceous, 2-seeded.

SPEC. CHAR. *Leaves* ovate, bluntish, entire; downy beneath. *Clusters* simple of few flowers.

Syn.—Styrax, folio mali Cotonei, *Bauh. Pin.* 452; *Tourn. Inst.* 598; *Ger. Em.* 1526.

Styrax, *Matth. Valgr.* v. 1. 80; *Camer Epit.* 80; *Lob. Ic.* v. 2. 151.

Στυραξ Diosc. lib. 1. cap. 79.

Στουράκυ, η λαγομηλιὰ, *hodie.*

Styrax Officinale, *Lin. Sp. Pl.* 35; *Willd.* v. 2, 623; *Ait. Hort. Kew. ed.* 2. v. 3. 59, *Sibth. Fl. Grec.* t. 375; *Woodv.* v. 1. t. 71; *Stokes Bot. Mat. Med.* v. 2. 516.

FOREIGN.—*Storax*, Fr.; *Storax.* Ger. Dan. Swed.; *Storace*, It.; *Estoraque*, Span.; *Storaque*, Port.; *Styraxboom*, Dut.

THIS tree, or shrub, is chiefly remarkable for producing the very powerful and fragrant balsam, called storax. It is a native of Syria, and the Levant; and is not uncommon all over Greece and the Peloponnesus, being known by the name of λαγομηλιά, in modern Greek. Dr. Sibthorp found it called στουράκι, a slight alteration of its original appellation. The shrub is naturalized in hedges in some parts of Italy, particularly about Tivoli, and was cultivated in England by Gerarde, before the year 1597. It is rarely met with in our gardens; but a very large tree is trained against the wall in the Botanic Garden at Chelsea, and regularly clothed with a profusion of its white blossoms every year, in May or June. This tree, Sir James Smith informs us, is the finest he ever beheld; and we are obliged

for the specimen, from which our figure was taken, to Mr. William Anderson, F. L. S., an excellent practical botanist and gardener.

The Storax-tree is of a middling size, seldom exceeding fifteen or twenty feet in height, with irregular, alternate, round, leafy branches, downy when young. The leaves are deciduous, elliptical, entire, somewhat pointed, and well compared by the old botanists to those of a quince; they are alternate, petiolate, smooth, of a fine green colour on the upper surface, and covered with hoary stellated down underneath. The flowers are in clusters, terminating the young lateral shoots, containing from two to five, or six, white flowers each. The calyx, as well as the corolla, is white and downy; the corolla is mono-or syn-petalous, funnel-shaped, and divided at the limb into five deep, elliptical, oblong, obtuse, spreading, segments: the filaments are ten, placed in a ring, awl-shaped, and inserted into the corolla; the anthers are yellow, erect, and oblong; the germen is oval, with a slender style and simple stigma. The fruit is a drupe of a globular form, containing one or two angular nuts, convex on one side and concave on the other. Fig. (*a*) represents the germen and pistil; (*b*) the stamens and anthers with the corolla removed; (*c*) the fruit.

Qualities and Chemical Properties.—The best Storax comes only from Asiatic Turkey, and is obtained in a fluid state, from incisions made in the bark of the trunk, or branches, of the Storax-tree. The tree is never wounded under six years of age, and cannot bear the annual incisions above twelve years. It is brought from Turkey, but is so adulterated, that it is very rarely met with in a pure state. Storax is bitter and pungent to the taste, and has a strong fragrant odour. Two sorts of this balsam are found in the market: Storax in the tear, and common Storax in larger masses. This has been called "storax in the lump," "red storax," and the separate drops "storax in the tear." The former is very rarely in separate tears, but in masses, composed of small white and pale reddish lumps, or having a uniform reddish yellow, or brownish appearance; being unctuous to the touch; soft like wax; and free from visible impurities. This is the Στύραξ καλαμίτης of the ancient Greeks. According to Galen, it was formerly brought from Pamphylia, in hollow

canes or reeds; whence it was called *Styrax calamita.* It is preferred to the common storax, in larger masses, which are lighter, less compact than the preceding, and have a large admixture of woody matter, like saw-dust. Although the impurities of this kind of Storax render it less valuable than the other, it is not less useful, and when purified, its medical qualities are no less potent. Storax should be chosen of a reddish brown colour; rather softish; unctuous to the touch, yet brittle and friable; and of a pleasant, sweet smell. From its yielding a pleasant odour of benzoic acid, when ignited, it is much used in Roman Catholic countries for incense.* And Pliny says that in his time the Arabs used it to give additional fragrancy to the perfumes of which they are so fond. They called it *Assthirak*, whence the Latin *Styrax* and our *Storax* have been evidently derived. Spirit dissolves it entirely; it consists principally of resin, with a small portion of benzoic acid. The directions in the London Pharmacopœia for purifying Storax, are: "Dissolve Balsam of Storax in rectified spirit, and strain it; then distil off the spirit by a gentle heat, until the balsam acquire a proper consistence." The Dublin College adopt a plan which is practised abroad; but it is somewhat objectionable, in consequence of an evolution of benzoic acid being produced by the heat of the iron plates.

It may not be improper here to observe, that the Storax of the Pharmacopœia ought not to be confounded with the Storax, or Liquidambar of commerce, which is a *liquid* balsam, said to be obtained from the Liquidambar *styraciflua*, a tree which grows in Virginia and Mexico, and has lately been acclimated to our own country. It is prepared, according to Petiver, in the island of Colross in the Red Sea, from the bark of a tree called *rosa mallos* by the natives, and considered by botanists the same as

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* The following is an excellent form for *fumigating pastiles*:—

Take of Charcoal eight ounces.
Gum-storax,
—— Mastich,
—— Benzoin, of each one ounce.
—— Copal half an ounce.

The whole must be finely powdered, and made into a proper consistence, by starch mucilage; after which the pastiles are to be properly formed.

the American species. The bark of this tree is boiled in salt water to the consistence of bird-lime, and then put into casks. Its colour is greenish; it has an aromatic taste, and an agreeable smell. That which is met with in the shops under this name, is of a weak smell, and a grey colour, and is supposed to be an artificial composition. Liquid storax was formerly used in external compositions, but is now entirely neglected.

Medical Properties and Uses.—Storax is stimulant and expectorant, and was formerly prescribed for asthma, and chronic affections of the wind-pipe; for amenorrhœa, &c. It is so far discarded from practice, that we never remember it to have been prescribed, and it is justly designated by Dr. Richard Pearson, as a useless article in the list of the materia medica.

Off. Prep.—Tinct. Benzoini Composita. *L.*
Styrax purificata. *D.*
Pilulæ e Styrace. *D.*

In the latter preparation, Storax appears to be added to opium, not on account of its virtue, but rather to disguise the administration of that powerful substance from patients, who are sometimes exceedingly prejudiced against it. "Even the name of opium," remarks Dr. John Murray, "requires to be concealed in a prescription;" and hence the reason of the names (Pilulæ Saponis cum opio, and Pilulæ e Styrace) given by the London and Dublin Colleges, being derived from the trivial ingredients.

It is remarked, in a very useful little work,* that four Balsams appear in the Pharmacopœia, which are denominated,

Benzoinum.
Balsamum Styracis.
Balsamum Peruvianum.
Balsamum Tolutanum.

In these names we find a singular want of uniformity, a defect which certainly ought not to exist in a work, the nomenclature of which has been so often changed on systematic principles—thus, in the first of these names, we have a *simple term*; in the second a *generic*, and a *specific noun*; in the third and fourth, a *generic noun*, *and specific adjective*. Two years after these observations were published, a revised edition of the Pharmacopœia appeared, but no notice was taken of these glaring inconsistencies.

* Medicamina Officinalia, seu Pharmacopœiæ Londinensis, Index Cura F. A. Marsan, M. D.

Polygonum Bistorta

XLVIII

POLYGONUM BISTORTA.

Great Bistort, or Snake-weed.

Class VIII. OCTANDRIA.—*Order* III. TRIGYNIA.

Nat. Ord. HOLERACEÆ, *Lin.* POLYGONEÆ, *Juss.* FAGOPYRINÆ, POLYGONEÆ, *Bart.* RUMICINÆ, POLYGONACEÆ, *Burn.*

GEN. CHAR. *Perianth* single, 5-parted, petaloid, inferior. *Fruit* a 2 or 3-cornered indehiscent nut. *Seed* solitary.

SPEC. CHAR. *Stem* simple, bearing one spike. *Leaves* ovate, waved, the radical ones running down the footstalks.

Syn.—Bistorta, *Matth. Valgr. v.* 296. *f.*; *Camer. Epit.* 683. *f.*

Bistorta major, *Ger. Em.* 399. *f.*; *Raii. Syn.* 147.

Bistorta major, radice minùs intortâ, *Bauh. Pin.* 192, *Mill. Ic.* 44. *t.* 66.

Serpentaria mas, seu Bistorta, *Fusch. Hist.* 773. *f.*

Polygonum Bistorta, *Lin. Sp. Pl.* 516; *Willd. v.* 2. 441; *Eng. Bot. v.* 8. *t.* 509; *Curt. Lond. fasc. i. t.* 22; *Hook Scot,* 120; *Woodv. t.* 34; *Stokes, v.* 2. 394; *Bull. Fr. t.* 314.

PROVINCIALLY. *Bistort; Oyster leit; Adder's-wort; Passions,* Cheshire; *Easter Giant, Patience Dock,* Manchester; *Stoinsi,* Ireland.

FOREIGN.—*Bistorte,* Fr.; *Bistortat,* It. Sp. Port.; *Natter-wurzel,* Ger.; *Slangeort,* Dan.; *Sertechnaja trawa,* Russ.

BISTORT is an indigenous perennial plant, growing abundantly in many parts of Britain, particularly in the northern counties, where it frequently proves a very troublesome weed. We found it in large patches in the meadows at Battersea, and also on the north side of Bishop's Wood near Hampstead, where it is said to have grown for more than a half a century. It flowers in May and June.

The root is creeping, woody, and generally more or less bent and crooked; it is about the thickness of a finger, surrounded with slender fibres, of a brownish black colour on the outside, and reddish within. The stem is solitary, simple, erect, about a foot or eighteen inches in height, round, swelling at the joints, striated and smooth. The leaves are entire, ovate, smooth, somewhat

flexuose, of a bright green colour, and glaucous beneath; the radical ones are somewhat cordate, pointed, and stand upon long winged, or rather decurrent footstalks; those of the stem are almost sessile, amplexicaule, having tubular, sheathing foot-stalks, each furnished with membranous stipulæ or ochreæ. The flowers terminate the stem in a close cylindrical spike, about two inches in length; each of them stands single on very short slender stalks, with membranous, notched, brown bracteas at the base. The calyx is generally rose-coloured, and deeply divided into five obtuse segments; the stamens are eight, tapering, longer than the calyx, and supporting purple anthers; the germen is triangular, bearing three distinct styles, with small obtuse stigmas. The nuts are triangular, black, and shining, each containing a single seed. Fig. (*a*) represents a perfect flower magnified; (*b*) the germen and styles.

According to Professor Alston, the name of this plant, Bistorte, *quasi bis torta*, twice twisted or wreathed, is of modern date; for it was formerly termed *Serpentaria*, *Colubrina*, and *Dracunculus*, Hoffman remarking, "Radix est serpentis modo intorta." The generic name Polygonum, is adopted from Dioscorides, whose πολυγονον αρρην, or male polygonum, is regarded as our P. *aviculare*, or common knot-grass.

Qualities.—The root of Bistort, the part used in medicine, is inodorous; but to the taste very astringent. It gives out its virtues to water, and "turns a solution of green vitriol to ink." Formerly, the young shoots were eaten in herb puddings in the North of England, where the plant is known by the name of Easter Giant, and even in the present day, according to Withering, the shoots and leaves are, about Manchester, substituted for greens, under the name of Patience Dock.

Medical Properties and Uses.—Bistort is really a very powerful astringent, and appears to be neglected merely because it grows in almost every meadow. The powdered root, in doses of a drachm, will be found useful in hæmorrhage, diarrhœa, and chronic dysentery; and, combined with bitters, has been recommended for the cure of intermittent fever, by Dr. Cullen. By the following quotation from Gerarde it will be seen, that its virtues were much better appreciated in former times: he says, "The iuyce of Bistort, put into the nose, preuaileth much againste the disease called Polypus . . . . . The root boyled in wine, and drunke, stoppeth the laske and bloudy flix; it stayeth also the ouermuch flowing of women's monethly sicknesses. The roote taken as aforesaid, stayeth vomiting, and healeth the inflammation and sorenesse of the mouth and throat; it likewise fastneth loose teeth, being holden in the mouthe for a certain space, and at sundry times."

c
d
Inula Helenium.

XLIX

INULA HELENIUM.

Elecampane.

Class XIX. SYNGENESIA.—*Ord.* II. POLYG. SUPERF.

Nat. Ord. COMPOSITÆ, γ, DISCOIDEÆ, *Lin.* CORYMBIFERÆ, *Juss.*, *De Cand.*, *&c.* CORYMBIACEÆ, *Burn.*

GEN. CHAR. *Receptacle* naked. *Involucrum* imbricated. *Florets of the ray* linear, numerous. *Anthers* with two bristles at the base. *Pappus*, simple, hairy.

SPEC. CHAR. *Leaves* ovate, sub-dentate, rugged, clasping the stem, tomentose beneath. *Scales* of the involvucre ovate, downy.

Syn.—Helenium, *Raii Syn.* 176; *Ger. Em.* 793. *f.*; *Camer. Epit.* 35. *f.*; *Matth. Valgr. v.* 1. 65. *f.*; *Fuchs. Hist.* 242. *f.*

Helenium vulgare, *Bauh. Pin.* 276.

Aster, *n.* 72. *Hall. Hist. v.* 1. 31.

Ελένιον, *Diosc. Ic. t.* 141.

Inula Helenium, *Lin. Sp. Pl.* 1236; *Willd. v.* 3. 2089; *Fl. Brit.* 891; *Eng. Bot. v.* 22. *t.* 1546. *Hook. Scot.* 245; *Woodv. t.* 108.

PROVINCIALLY.—*Great-Flowered Elecampane*; *Scab-wort*; *Horse-heal.*

FOREIGN.—*Inule aunée*, Fr.; *Enula Campana*, Ital.; *Enula Campana*, Sp.; *Alantwurzel*, Ger.; *Gewoon alant*, Dutch; *Deujatschik*, Russ.

ELECAMPANE is one of the largest British herbaceous plants; it is occasionally met with in moist meadows, and pastures, in many parts of the south and west of England, flowering in July and August. We observed it several years ago in the meadows near Pirten-Hall, in Bedfordshire; and it was noticed by Sir James E. Smith, in 1795, between Worcester and Ludlow, and between Bishop's Castle and New Town, Montgomeryshire. It grows likewise in several parts of Essex, Norfolk, and Sussex;

also about St. Ives, Cornwall, and Bugden, Huntingdonshire. It was found between Ulverston and Foulness, by Mr. Crowe; and near Ewell, Surrey, by Dr. Thomson.

The root is thick, fusiform, branching, and aromatic The stem rises three or four feet high; it is thick, round, leafy, furrowed, solid, branched and downy towards the top. The leaves are large, ovate, slightly toothed, veiny, of a deep green colour above, and downy and hoary underneath; the radical ones are a foot long and stalked, but those on the stem are sessile and clasping. The capitula of flowers are large, radiated, solitary, terminal, and of a golden yellow colour. The involucre is hemispherical; the outer scales are broad, imbricated, and downy on both sides; the inner are narrow, linear, and chaffy. The florets of the disc are very numerous, perfect, tubular, with five equal segments; those of the radius numerous, spreading, ligulate, linear, each terminating in three unequal teeth. The anthers are united into a cylindrical tube, and furnished with bristles at their base: the germen in all the florets is oblong, having a thread-shaped cloven style, and spreading obtuse stigmata. The seeds are quadrangular, smooth, and furnished with a simple down. The receptacle is reticulated and roughish.—Fig. (*a*) represents a floret of the radius, showing the germen and style; (*b*) a floret of the disc; (*c*) the corolla removed, showing the anthers united into a tube; (*d*) the anthers spread, showing the 5 sharp teeth at the summit, and 10 straight bristles at the base.

Elecampane is also a native of Japan, Denmark, Germany, Flanders, Switzerland, Austria, France, Piedmont, and Spain; and is supposed to be the Inula of Pliny, who mentions Helenium as a different plant. Horace likewise refers to it.

> Erucas virides, inulas ego primus amaras
> Monstravi incoquere.—Sat. 8. v. 51.
>
> ——————quum rapula plenus
> Atque acidas mavult inulas.—Sat. 2. v. 44.

Professor Alston says, "the description of Dioscorides', first Helenium, l. i. c. 27, p. 22, agrees tolerably well with our Inula.

Some think it the Panax Chironium Theophrasti Hist. l. 9 c. 10."

Qualities and Chemical Properties.—Elecampane root has a strong, partly aromatic and partly fœtid odour; its taste is disagreeable, bitter and aromatic; and it leaves, on chewing it, a burning heat, which remains for a considerable time. Both alcohol and water extract its virtues, but the former most completely.

In examining the root of the Inula Helenium, Mr. Rose imagined, that he discovered a new vegetable product, to which Dr. Thomson, Professor of Chemistry, Glasgow, has given the name *Inulin*. It is white and pulverulent, like starch. When thrown on red-hot coals, it melts, diffusing a white smoke, with the smell of burning sugar. It yields, on distillation in a retort, all the products furnished by gum. It dissolves readily in hot water; and precipitates almost entirely on cooling, in the form of a white powder; but before falling down, it gives the liquid a mucilaginous consistence. It precipitates quickly on the addition of alcohol. Inulin is obtained by boiling the root of this plant in four times its weight of water, and leaving the liquid in repose. MM. Pelletier and Caventon have found the same starch-like matter in abundance, in the root of colchicum; and M. Gautin in the root of pellitory. It has also been found in the tubercles of the Helianthus *tuberosus*, (Jerusalem Artichoke,) by M. Braconnot. Starch and inulin combine; and when the former is in excess, it is difficult to separate them. The only method is to pour infusion of galls into the decoction, and then to heat the liquid; if inulin be present, a precipitate will fall, which does not appear till the temperature rises to upwards of 212° F., while if only starch be present, it will redissolve at 122° F.

The action of inulin on the animal economy has not yet been ascertained.

Medical Properties and Uses.—The root of this plant is among the least efficacious of bitters and aromatics; it has the reputed virtues of a diaphoretic, diuretic, expectorant, and

tonic. The ancients had a high opinion of its medicinal properties, and it was warmly recommended in dyspepsia, palsy, cachexy, dropsies, colica pictonum, sciatica, uterine obstructions, and pulmonary complaints; but it is a useless appendage to the materia medica, and is now never used, unless it be by "*cow-leeches*," who are ignorant of its properties, or by dishonest druggists, who add a small quantity of tartar-emetic to it, and sell the mixture for powdered ipecacuanha; which, of course, produces a nauseating and depressing effect, that genuine ipecacuanha would not. This spurious article costs about two shillings a pound, while ipecacuanha is sometimes as high as thirty shillings; and is so like the latter in appearance, that great temptations are held out, to a set of men who too often profit by the ignorance of the medical practitioner; and are alike unmindful of his reputation, or of the recovery of their fellow-creatures from sickness.

Dose.—The dose of the powdered root may be from ℈j to ʒj; in infusion ʒj; and from ʒij to ℥ss in decoction.

Bruised and macerated in wine with whortle-berries and balls of ashes it dyes a blue colour, but is not much used.

The young branches of Inula Crithmifolia are frequently brought to market instead of samphire, to which they bear an external similitude, but possess none of its peculiar properties.

Ricinus communis

RICINUS COMMUNIS.

Common Palma-Christi, or Castor-oil Plant.

Class XXI. MONŒCIA. — *Order* VIII. MONADELPHIA.

Nat. Ord. TRICOCCÆ, *Lin.* EUPHORBIÆ, *Juss.* EUPHORBIACEÆ, *De Cand.*, &c. &c.

GEN. CHAR. Male. *Calyx* 5-parted. *Corolla* 0. *Stamens* numerous.

Female. *Calyx* 3-parted. *Corolla* 0. *Styles* three, bifid. *Capsule* 3-celled. *Seed* one.

SPEC. CHAR. *Leaves* palmate peltate; lobes lanceolate serrated. *Stem* herbaceous, pruinose. *Stigma* three, cloven at the tip. *Capsules* prickly.

Syn.—Ricinus, *Ger. Em.* 496.
Ricinus vulgaris, *Bauh. Pin.* 732; *Hist.* 3. 642.
Ricinus sive Cataputia major vulgatior, *Park.* 128; *Raii. Hist.* 166.
Avancæ, *f.* Citavanacu, *Rheede Hort. Malab.* 2. 57. *t.* 32.
Ricinus communis, *Lin. Sp. Pl.* 1430; *Willd. v.* 4. 564; *Woodv.* 171; *t.* 61.

FOREIGN.—*Le noix Ricin ordinaire*, Fr.; *Semi e l'olio di Ricino*, Ital.; *Palmoel, Ricino*, Span.; *Gemeiner wunderbaum; Rizinusöhl*, Ger.; *Eranda*, Sans.; *Areud.* Hind.; *Khirwa*, or *Charua*, Arab.; *Wonderboom*, Dutch; *Nhambu guaçu*, Braz.

THE Castor-oil plant, from the seeds of which the oil is obtained, grows spontaneously in many tropical districts. In our gardens it is well known as a tall annual plant: it is found native in almost every part of the East and West Indies, South America, and China. In Africa, the Palma-Christi, which seldom rises more than four or five feet high in England, attains the size of a considerable tree. Clusius observed it in Spain, with a trunk as large as a man's body, and fifteen or twenty feet high. Ray asserts, that in Sicily it is as large as the common elder-tree,

woody, and perennial. Willdenow, however, expressly says, "Planta semper annua, nunquam fruticosa vel arborea, nec in calidissimis terræ plagis lignescit."

The root is thick, whitish, and furnished with many slender fibres. The stem, as we have already observed, varies in height; it is round, thick, jointed, smooth, of a purplish red colour towards the top, and glaucous at the lower part. The leaves are on long tapering purplish footstalks, large, subpeltate, and deeply divided into seven acute, serrated, lanceolate lobes, of a blueish green colour. The flowers are in long, green, glaucous spikes of a blueish green colour, springing from the divisions of the branches, and appear in August and September; the males occupy the lower part of the spike, the females the upper. The *male* flower is destitute of a corolla, and consists of a calyx divided into five oval, pointed, purplish segments, inclosing several long stamens united at the base; the *female* flower is composed of a calyx cut into three narrow segments of a reddish colour; the styles are three, slender, and forked at the apex. The capsule is trilocular, covered with rough spines, and bursts elastically to expel the seeds; the seeds are usually three, of an oblong flat figure, and greyish colour, with brownish red streaks. Fig. (*a*) represents an anther; (*b*) a *female* flower, with the prickles removed, showing the calyx, and the insertion of the stamens; (*c*) a prickle, (*d*) the capsule, (*e*) the back view of a seed, (*d*) the side view of a seed.

The scientific name Ricinus, is said to have been bestowed on the present genus, from the fancied resemblance of its seeds to the small apterous insect called a *tick*, ricinus; and this, according to Ainsworth, is compounded of *res* and *canis*, because the tick or tyke, is particularly troublesome to dogs. It is generally regarded as the Κικι or Κροτων of Dioscorides, who observes, that the seeds are powerfully cathartic. It is likewise mentioned by Ætius, Paulus Ægineta, Pliny, and other ancient authors; hence this species of Ricinus appears to have been known at a very early period; and we are informed by Turner in his Herbal, that it was cultivated in England in 1562.

Dierbach* informs us, that the plant was known to Hippocrates under the name Κροτων; and Dr. Ainslie says, the castor-oil plant grows in great abundance in almost every part of India. It is one of but few examples of an expressed oil possessing medicinal activity; and it is only within a very few years that it has been used in this country. The London College order the oil to be obtained by expression, a method, which according to Mr. Long in his History of Jamaica, is employed there, when it is intended for medical use. The expressed oil is, however, more acrimonious, and less pure, than that which is imported from the West Indies, which is obtained in the following manner:—"The seeds being freed from the husks, which are gathered upon their turning brown, and when beginning to burst open, are first bruised in a mortar, afterwards tied up in a linen bag, and then thrown into a large pot, with a sufficient quantity of water, and boiled till the oil has risen to the surface, when it is carefully skimmed off, strained, and kept for use." The oil obtained by coction has however the disadvantage of becoming rancid, sooner than that procured by expression. The seeds yield about one-fourth of their weight of oil.

Qualities and Chemical Properties.—Castor oil is of a pale yellow colour, is transparent, viscid, and has little taste or smell. It leaves, however, a slight burning in the throat, after it has been swallowed. That obtained by boiling, becomes rancid much sooner than that procured by expression. It is often adulterated, says Dr. Thomson, with olive oil, linseed oil, and poppy-oil, which may be readily detected by adding an equal quantity of *alcohol*, sp. gr. .820 to any given quantity of the suspected oil; if it be pure, a uniform solution will take place, which will not happen if it be adulterated: and the same will be the case if a weaker spirit be employed, by the addition of camphor. Excepting that it is soluble in alcohol, it has all the characters of other expressed oils. Boiled in nitric acid, it is converted into a sort of wax, which melts too readily to be used for making candles.

* Materia Medica of Hippocrates, ch. v.

Poisonous Effects.—Three drams of the seeds of Palma Christi, deprived of their ligneous envelope, were introduced into the stomach of a dog of middle size; and the æsophagus was tied. The next day he shewed no remarkable symptoms. The day following, at eight o'clock in the morning, he experienced very severe vertigoes; it was impossible for him to walk without falling: he did not moan. At noon, he laid on his side, in great insensibility, his inspirations were few and deep; the pulsations of the heart natural. He died at two o'clock.

Dissection. The mucous membrane of the stomach was not red, but exhibited some small ulcers, the centres of which were black; the rectum, which was extremely red, was inflamed in its interior; the lungs, though crepitating, contained a small quantity of venous blood."—*Orfila.*

Bergius relates that a robust man chewed a seed, which produced a stinging sensation in the fauces. He passed the night quietly; but the next morning had copious vomitings, and during the whole day he made alternate efforts to vomit, and to go to stool without passing much. From these facts, and other experiments, Orfila infers that the seeds produce a local irritation, and act upon the nervous system after being absorbed.

Medical Properties and Uses.—As a laxative, castor-oil acts so mildly and speedily, that it is often resorted to in cholic, obstinate constipations, hæmorrhoids, and diseases where irritation by other purgatives would be injurious. Pregnant women advantageously have recourse to it; and in this country, as well as in India, where it is prescribed by native physicians, it is a useful evacuant for children. Unlike all other purgative medicines, its doses may be often lessened, when an individual is in the habit of taking it. The bark of the root is a powerful purgative; and in conjunction with chillies and tobacco leaves, is an excellent remedy for gripes in horses; in the West Indies, it is said frequently to act as a diuretic, and the leaves are there used as applications to blisters. Many of the planters burn the oil in their house lamps, and it is a valuable ingredient in injections.

Dose. From half an ounce to an ounce and a half, which may be taken floating on peppermint water, to which can be added a little tincture of senna, if necessary. Sometimes it is formed into an emulsion, by means of mucilage or the yolk of an egg. To prevent nausea or griping from it, a little rum is often employed in the West Indies. The most pleasant mode of administration is to float the oil on a little warm milk, and immediately after swallowing it to wash the mouth with a small quantity of the same fluid; no disagreeable taste is then perceived.

LI

ALTHÆA OFFICINALIS.

Common Marsh-mallow.

Class XVI. MONADELPHIA.—*Order* VIII. POLYANDRIA.

Nat. Ord. COLUMNIFERÆ, *Lin.* MALVACEÆ, *Juss.*, *De Cand.*, &c.

GEN. CHAR. *Outer Calyx* 6 or 9-cleft. *Capsules* numerous, 1-seeded.

SPEC. CHAR. *Leaves* simple, soft and downy, obsoletely 5-lobed. *Peduncles* many flowered.

Syn.—Althæa vulgaris, *Raii Syn.* 252; *Park.* 303.
Althæa Ibiscus, *Ger. Em.* 933. *f.*
Althæa, *n.* 1074; *Hall. Hist. v.* 2. 23.
Althæa, *Fuch's Hist.* 15. *f.*; *Camer. Epit.* 667. *f.*; *Matth. Valgr. v.* 2. 276 *f.*
Althæa officinalis, *Lin. Sp. Pl.* 966; *Willd. v.* 3. 770; *Fl. Brit.* 739; *Eng. Bot. v.* 3. *t.* 147; *Hawk. Scot.* 208: *Woodv. v.* 1. *t.* 53; *Stokes, v.* 3. 530.

FOREIGN.—*Guimauve*, Fr.; *Altea*, Ital.; *Althea*, Port.; *Malvarisco*, Sp.; *Eibisch*, Ger.; *Der Heemst*, Dutch.

THE Marsh-mallow is a perennial plant, a native of Britain, growing in marshes near the sea; it occurs among other places, in great abundance on Romney Marsh, Kent: and flowers from July to September.

The roots of this plant are spindle-shaped, and somewhat woody. The stems are annual, round, leafy, simple, erect, branching towards the top, downy, and two or three feet in height. The leaves, which are about two inches and a half in length, of a hoary green colour, and downy on both sides, feel smooth and velvety when rubbed between the fingers; they are alternate, ovate, or heart-shaped, plaited, unequally serrated, more or less deeply divided into five acute lobes, and stand upon longish footstalks. Towards the lower part of the stem they are broader and more heart-shaped at the base. The flowers are of a uniform pale bluish colour, and grow in very short, dense, axillary panicles. The outer calyx has 8, 9, 10, or 12 narrow deep divisions, the inner is less deeply cleft into five broader segments. The petals are five, inversely heart-shaped, and at-

tached by their claws to the base of the tube of the stamens. The stamens are numerous, capillary, separate at the summit, and support kidney-shaped anthers. The germen is orbicular, surmounted by a cylindrical style, divided into many bristle-shaped stigmas, which rise above the anthers. The capsules, generally about 20 in number, are compressed, and ranged in a circle round the columnar receptacle; each of two valves, and containing a solitary, kidney-shaped, flattened, smooth, brown seed. Fig. (*a*) represents the pistil, with its bristle-shaped stigmas and germen; (*b*) the anthers and filaments, united into a tube; (*c*) a single stigma; (*d*) a single anther; (*e*) the outer calyx; (*f*) the inner calyx.

Qualities and Chemical Properties.—"All parts of this plant yield a mucilage by infusion or decoction in water; the root does so most abundantly, and freed from the outer bark, is kept in the shops. It is white, inodorous, and insipid."

MM. A. Payen, and A. Chevalier, state, that an alcoholic infusion of the flowers, (previously dried by a steam heat, out of contact of light,) gives a sensible tinge of green, on being mixed with pure water, containing $\frac{1}{100000}$ of potash, $\frac{1}{1000}$ part carbonate of soda, and $\frac{1}{25}$ of lime-water.

It is generally believed that the mucus contained in what are termed demulcent drinks, relieves diseases of the bladder and urinary passages, by passing off with the urine. We enter our protest against such an unphysiological notion; for it is evident that warm water would be quite as efficacious, could the stomach retain as much in its simple state, as when combined with mucilaginous particles; which, no doubt, pass into *chyle*, at the same time that the aqueous part of the potion becomes absorbed, and being filtrated through the kidnies, dilutes the urine, and renders it less stimulating. On these grounds simply, we recommend the decoction of marsh-mallow in urinary diseases; while we are willing to admit that irritation of the fauces and intestinal canal may derive benefit from the lubricating properties of mucus; and as this is more pure in marsh-mallow root than in linseed, it ought to be preferred.

The roots well boiled, and beaten into a pultaceous mass, are sometimes applied as poultices; and a decoction, either of them or of the leaves, is a useful application to irritable eruptions, and ulcers. It forms also a useful vehicle for injections.

Off. Prep.—Decoctum Althææ. Comp. *E.*

Syrupus Althææ. *L. E.*

STRYCHNOS NUX-VOMICA.

Poison-nut.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. LURIDÆ, *Lin.* APOCYNEÆ, *Juss., De Cand.*, &c.

GEN. CHAR. *Corolla* tubular, 5-cleft. *Berry* 1-celled, with from 1 to 5 seeds, with a hard woody rind. *Stigma* capitate.

SPEC. CHAR. *Leaves* ovate, petiolate. *Stem* unarmed.

Syn.—Nux Vomica officinarum, *Bauh. Pin.* 511; *Raii Hist.* 1814; *Ger. Em.* 1546, *Burm. Zeyl.* 171.

Solanum arboreum indicum maximum, *Breyn. Prodr.* 97.

Caniram, *Rheede Hort. Malab.* 1. 67. *t.* 37.

Strychnos Nux Vomica, *Lin. Sp. Pl.* 271; *Willd. v.* 1. 1052; *Fl. Zeyl. n.* 91, *Roxb. Coromand.* 1. 8. *t.* 4; *Gærtn. Fruct.* 2. 427; *Stokes* 1. 412.

FOREIGN.—*Noix vomique*, Fr.; *Noce vomica*, It.; *Mataperros*, Sp.; *Noz vomica*, Port., *Krähenaugen, Brechnuss*, Ger.; *Braaknooten*, Dut., *Brækmoed*, Dan., *Rafkaka*, Swed.; *Leuz alke, Kanekulkelb*, Arab.; *Yettie cottay*, Tam., *Moostighenza Musadi*, Tel.; *Culaka; Kutaka; Veshamoostibeejum*, Sans.; *Koochla*, Hind.; *Ma-tseen*, Chin.; *Caniram*, Malab.

THE Strychnos Nux Vomica is a native of the East Indies, and is very common on the coast of Coromandel, where it flowers during the cold season. It is the tree called, by Plunknet, *Cucurbitifera Malabarensis ceratoniæ foliis rotundis, fructu orbiculari rubro, cujus grana sunt nuces vomicæ officinarum*; described and figured in the Hortus Malabaricus, under the name of *Caniram*.

This species of Strychnos is a middle-sized tree, with a short, crooked, thickish trunk, irregularly branched, and covered with a smooth ash-coloured bark. The leaves are opposite, short, petioled, ovate, shining, smooth on both sides, entire, three to five-nerved, differing in size from one inch and a half to four

inches long, and from three to four inches broad. The flowers are small, greenish-white, and collected into small terminal cymes; they are said to exhale a strong disagreeable odour. The calyx is five-cleft, and deciduous: the corolla is monopetalous, of a pale green colour, and divided at the border into five segments: the filaments are five, very short, with roundish anthers; the germen is superior, roundish, and crowned with a single style, the length of the tube of the corolla. The fruit is a berry about the size of a pretty large apple, globular, covered with a smooth hard rind, of a rich orange colour when ripe, and filled with a soft jelly-like pulp. The seeds are generally five in number, and immersed in the pulp of the fruit. They are round and flat, about an inch in diameter, and a quarter of an inch thick, with a prominence in the middle, of a grey colour externally, and covered with a woolly matter, but internally hard and tough, like horn. Fig. (*a*) represents the germen, pistil, and calyx; (*b*) the corolla spread, showing the anthers magnified; (*c*) a section of the fruit of the natural size.*

The systematic name, Strychnos, which occurs in Pliny and Dioscorides, is derived from στρωννυμί, to *overthrow*, in allusion to the powerful effects of the plant to which it was assigned; the Στρυχνος of the Greeks being a kind of *nightshade*. It was Linnæus who adopted this name for the present genus, on account of the analogy of its poisonous qualities with the plant of the ancients.

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* There is a tree, but exceeding rare on this coast, which the Telingas call Naga Musadie (Naga, or Tansoo Paum in the Telinga language means the Cobra de Capella, or *Coluber Naja* of Linnæus: tansoo means dancing, and paum snake, this sort being famous for erecting its head, and moving it from side to side at the sound of music,) *i. e.* Cobra de Capella Musadie. I have only once met with it, and then it was pointed out by a Telinga physician. The tree had been cut down and carried away some time before; most of the roots were also dug up and carried away: from the only remaining one that I could find, some shoots had sprung up. The leaves upon these were opposite, short petioled, obtuse, lanced, three-veined, about two or two and a half inches long, by three quarters broad; the petioles were very short, and connected at their insertions by a membrane, as in the natural order of Rubiaceæ. I took up the root with the greatest care, cut off the upper part, from whence the shoots grew, and planted it in my garden; but it soon perished. From the above circumstance, I am inclined to think there is a species different from the Nux Vomica tree, which yields the real Lignum Colubrinum. The wood of the root of this sort is esteemed by the Telinga physicians an infallible remedy for the bite of the naja, as well as for that of every other venomous snake: it is applied externally, and at the same time given internally: it is also given in substance for the cure of intermitting fevers.—*Roxburgh's Plants of Coromandel*, p. 8.

Qualities and Chemical Properties. — The taste of the vomic nut, which is the seed of the fruit or berry, is intensely bitter; it has little or no smell, and is so hard that it cannot be reduced into powder by beating, but requires to be filed down. According to an analysis by M. Chevreul, it consists of acidulous malate of lime, gum, vegeto-animal matter, bitter matter, fixed oil, colouring matter, (which was yellow, and probably starch, which could not be directly extracted on account of its desiccation; earthy and alkaline salts, woody hairs, and wax, which latter appears to preserve the perisperm from humidity. Messrs. Pelletier and Caventon have since discovered two peculiar vegetable alkalies, *strychnine* and *brucine*, which are fully adverted to under the head of medical properties, and for the account of which we are indebted to an excellent translation of Majendie, by Joseph Houlton, Esq. F. L. S.; and for much further information respecting their important curative powers to the "Hospital Facts" and Observations of Dr. J. L. Bardsley.

Poisonous Effects.—It is very generally believed amongst the lower classes of people in this country, that nux vomica, (by them called *rat's-bane*,) is capable of poisoning animals only; and on a coroner's inquest held during the last year, a juryman observed, that the vulgar imagine that it will not produce death to those persons who are born blind. So strongly, he said, was he impressed with this idea, that he should have had no hesitation in taking a quantity of it, before he had heard, on the present occasion, of its baneful effects on the human constitution. Nux vomica is one of the narcotico-acrid class of poisons, and seems to have a direct power over the spinal cord. It produces laborious respiration, which is followed by torpor, trembling, coma, convulsions, and death. It is fatal to dogs, hares, wolves, foxes, cats, rabbits, rats, ducks, crows, and other birds: and Loureiro poisoned a horse by an infusion made of the seeds in a half-roasted state.

"Hoffman reports that a young girl, ten years of age, labouring under an obstinate quartan fever, took, at two doses,

fifteen grains of nux vomica: she died in a short time, after having experienced extreme anxieties, and having made some efforts to vomit."

'A person swallowed in the morning a scruple of nux vomica in powder, and drank afterwards a few glasses of cold water, in order to diminish the bitterness occasioned by this substance. Half an hour after, he appeared to be drunk; his limbs, especially his knees, were stiff, and tense; his walk was staggering, and he was afraid of falling. He took some food, and the symptoms disappeared without his having had either stools or vomiting."—*Orfila.*

"The administration of nux vomica, and of the root of gentian, to a woman affected with ague, was followed by convulsions, cold and stupor, and almost every part of the body was torpid." —*Scutter's Dissert.*

Dissections of those who have died show no organic lesions; proving that it acts directly on the nervous system: and those who are anxious to see the result of numerous experiments on dogs, and other animals, must consult Orfila's Toxicology; Wepfer's Historia Cicutæ Aquaticæ, p. 248, and Dr. Chapman's American Medical Journal.

TREATMENT.—In the treatment of poisoning by nux vomica, keeping up artificial respiration is of the utmost importance; ammonia and hot brandy and water should also be given; and for further information the reader may consult the article "Nicotiana Tabacum."

The subjoined information is interesting. "M. Drapiez has ascertained, by numerous experiments, that the fruit of the Feuillea *cordifolia* is a powerful antidote against vegetable poisons. This opinion has long been entertained by naturalists, but it appears that M. Drapiez has verified the fact by numerous experiments. He poisoned dogs with the rhus toxicodendron, hemlock, and *nux vomica.* All those that were left to the effect of the poison, died; but those to whom the fruit of this plant was administered, recovered completely, after a short illness. To see whether this antidote would act in the same way, when

applied externally to wounds into which vegetable poisons had been introduced, he took two arrows which had been dipped in the juice of manchenille, and slightly wounded with them two young cats. To one of these he applied a poultice, composed of the fruit of the Feuillea *cordifolia*, while the other was left without any application. The former suffered no other inconvenience except from the wound, which speedily healed; while the other, in a short time, fell into convulsions, and died. It would appear from these experiments that the opinion entertained of the virtues of this fruit, in the countries where it is produced, is well founded. It loses its virtues, if kept longer than two years after it has been gathered."—*Annals of Philosophy*, v. 15, p. 389.

Medical Properties and Uses.—For a century nux vomica has been known as a powerful medicine, and employed in a vast variety of diseases, with different degrees of success. Linnæus, who could know but little of pathology, attributed dysentery to irritation of the mucous membrane of the intestines, produced by worms, and recommended these seeds for that disease, in consequence of their intense bitter, and narcotic powers. Hagstrom considered, that a scruple dose, given in the morning, was a specific for dysentery; and Bergius narrates a case, in which the evacuations were stopped for twelve hours, but afterwards returned. Roxburgh says: "the wood is hard and durable, and is used by the natives for many purposes. It is exceedingly bitter, particularly the root, which is used to cure intermittent fevers and the bites of venomous snakes. The seeds are employed in the distillation of spirits to render them intoxicating. The pulp of the fruit seems perfectly innocent, as it is eaten greedily by many sorts of birds." Nux vomica is also occasionally employed by brewers in this country to impart an intoxicating effect to beer.

Dr. Good was never able to give more than seven grains of the powdered nut for a dose, without the head becoming stupid and vertiginous. From his "Study of Medicine" we make the following extract, explanatory of its effects in paralysis:—

" Dr. Fouquier, of the Hospital de la Charité at Paris, has tried it upon a very extensive scale, and apparently with a perfect restoration of health in many cases. He gives it in the form of powder, or alcoholic extract: four grains of the first, and two of the last are a dose, and may be taken from two to six times a day. He also employs it in injections. In half an hour after administration the paralyzed muscles have, in various cases, begun to evince contraction: and what is peculiarly singular, while a spastic contraction is determined to these, the sound parts remain unimplicated in the action. A frequent effect, unquestionably dependent on the bitter principle of the plant, is that of increasing the appetite, and diminishing the number of the alvine evacuations when in excess. Sometimes it produces a temulent effect, and occasions stupor, and a sense of intoxication, and, when rashly administered, general tetanus with all its train of distressing and frightful symptoms.

" Like all other powerful medicines in their first and indiscriminate use, the nux vomica appears sometimes to have been highly beneficial, sometimes mischievous, and sometimes to have produced violent effects on the nervous system without an important change of any kind. Dr. Cooke has collected a variety of cases in which it has been tried in our own country as well as in France, and this seems to be the general result. The present author has tried it in various instances, but has never been able, from its tendency to temulency, to proceed much more than half as far as some practitioners have gone, who have gradually advanced it from four grains of the powder to twenty-four, three or four times a-day. In the case of the late E. Sheffield, Esq., of the Polygon, Somer's Town, Mineralogist to the estates of the Duke of Devonshire, and who is well known to have been one of the best practical geologists of his day, the author commenced with two grains alone of the powder given three times daily, as this was a hemiplegia following upon a second fit of atonic apoplexy, with a general debility both of the mental and corporeal powers, the patient being at the time rather upwards of sixty years of age. This dose occasioned no manifest effect, and on the third day, August 21, 1819, it was gradually increased to six grains. It now produced a powerful sense of intoxication, but with clonic agitation instead of a tetanic spasm, of the paralyzed leg and arm, and great heat down the whole of the affected side. The powder was continued in this proportion for three or four days, but the stupor and vertigo were so considerable, and afflictive, that the patient could not be persuaded to proceed with it any longer, and it was in consequence suspended. On the ensuing September 1, he was evidently weaker, and recommenced the medicine at his own desire; the dose was gradually raised from four to six grains three times a-day: the same clonic effect was produced with the same sensation of heat through the whole of the affected side, but without a sense of intoxication. The dose was advanced to eight grains, when the head again became affected, but without any permanent return of muscular power or sensation in the palsied limbs, or any other effect, than a few occasional twitches, and involuntary movements. Mr. Sheffield could not be persuaded to persevere any farther, and the medicine was abandoned. He continued in the same feeble state for about three months, when he fell a sacrifice to a third apopletic attack apparently of a much slighter kind.

"I have stated that this was a case of atonic affection, and hence there was no opportunity of giving full play to the power of the nux vomica. But so far as I have seen, I think we may come to the following conclusion: first, that when only small doses can be given without seriously affecting the head, as in cases of great general or nervous debility, the effect is a clonic instead of an entastic or tetanic spasm. Secondly, that under this effect it is not calculated to do any permanent good, and often produces mischief. And thirdly, that it is most serviceable in entonic hemiplegia, after the patient has been sufficiently reduced from a state of high energetic health, and especially energetic plethora, to a subdued and temperate state of pulse; in which state it may very frequently be employed in doses sufficient to excite strong, or entonic, instead of weak or clonic spasm."

In 1809, M. Majendie presented to the Institute of France some account of a course of experiments, which led to an unexpected result, viz. that an entire family of plants (the Strychni-Amari) possessed the singular property of strongly exciting the spinal marrow, without affecting, except indirectly, the function of the brain; and it was remarked at the close of this report, that such a result might be turned to advantage in the treatment of diseases. This conjecture has since been amply confirmed at the bedside of the patient. M. Majendie, ignorant of Dr. Fouquier's published cases, succeeded in curing a person of paralysis, and has since given the alcoholic extract of nux vomica, not merely to palsies, both partial and general, but also in various other kinds of local and general debility.

Preparation of the Alcoholic Extract of Nux Vomica.

Treat a given quantity of rasped nux vomica with alcohol at 40° * and at the lowest possible temperature; let it be renewed until nothing further is taken up from the rasping; then evaporate gently to the consistence of an extract, The activity of the matter obtained will be in proportion to the strength of the alcohol. The alcoholic extract may be obtained dry, by filtering a saturated tincture, (made with alcohol at 36°) and evaporating in the common way.

Action on the Animal System.

One grain of this substance absorbed in any part of the body, or taken into the stomach with food, will destroy a large dog in a very short time, by producing paroxysms of tetanus which interrupt respiration, until complete asphyxia ensues: and when a large quantity has been administered, the animal has been destroyed by its direct action on the nervous system. A contraction of the spleen has been observed in

* By the déromèter of Baumé.

animals which have been poisoned by this substance. *On touching an animal under the action of the resin, a sensation similar to a strong electric shock is felt.* The division of the spinal marrow, and even complete decollation, do not interfere with the peculiar action of this substance. Its effects on the human subject are exactly the same; and no indication of the nature of its action, or of its exhibition, is traceable in the body after death.

The effects, in cases of paralysis, are similar to those described; but they are exerted in a remarkable manner upon the parts affected. These are the seat of tetanic shocks, of a prickly sensation, and of a perspiration, which is not observed elsewhere. In hemiplegia the sound side of the body remains tranquil, while the affected one is the seat of extreme agitation: the tetanic attacks succeed each other rapidly, and an abundant exudation takes place. Even an anomalous eruption has been observed, while the healthy side has been perfectly free. One side of the tongue is sometimes sensible of a decidedly bitter taste, which is not perceptible on the other. If the dose be augmented, both sides become the seat of tetanic action, though not equally so. Sometimes the effect is so violent as to throw the patient out of bed. In a very small quantity, this extract has no immediate action, at least of a perceptible kind; and it is not until after several days that its good or bad effects display themselves.

Practical Employment of the Alcohol Extract of Nux Vomica.

It may be given in all diseases of debility, whether local or general—and in palsies of every description. It has been administered with perfect success in amaurosis accompanied with paralysis of the upper eyelid:* and very good effects have followed its exhibition in weakness of the genital organs, and of the stomach, incontinence of urine, and extreme general debility, accompanied with an irresistible disposition to somnolency. It has been recently tried with advantage in partial atrophy of the extremities, both superior and inferior.† The medicine, however, must not be exhibited immediately after the apoplectic attack which has caused the paralytic affection; nor is a cure to be expected from it where there is a lesion of the brain.

It has been given to the extent of twenty grains in a case where paralysis supervened to an attack of apoplexy, without benefit,‡ although the tetanic affection of the parts involved was considerable. Many physicians have borne testimony, however, to the efficacy of the medicine in all the varieties of nervous debility; and since the publication of the former edition of the Formulary, several cases of success, in paralysis more especially, have been recorded. M. Chauffart, in particular, has reported the cure of a case of palsied rectum.§

* By Mr. Edwards. † Experience of M. Majendie.

‡ By M. Chauffart. Journ. Gen. de Med. Oct. 1824.

§ Dr. Baxter, (New York Med. Repos. vol. 8,) records a case of hemiplegia in a child, which was cured by this medicine. A very satisfactory one is reported by M. Gendron in the Journ. General for November, 1824. It has been given with success too in a case of chorea sancti viti.

Method of Employing this Remedy.

The preferable form is that of pills, each containing one grain of the extract; we may commence with one or two daily, increasing the dose until the desired effect be produced. The pills should be given in the evening, as the night time is the most proper for observing the phenomena. In general from 4 to 6 grains per diem will be sufficient to produce tetanic action; but sometimes it has required as much as 24 or 30 grains in the day. If it should be found necessary to suspend the medicine for a time, it must be recommenced with small doses, and gradually increased. When it is intended to produce but slight effects, one grain, or even half a grain per diem will be sufficient. A tincture may also be employed according to the following formula:—

Tincture of Nux Vomica.

Take of	Alcohol at 36°	1 once.*
Dissolve	Dry extract of Nux Vomica . .	3 grains.

Of this a few drops may be given in any simple vehicle. In this form it may also be used by friction upon the parts affected; it is a mode much employed in Italy, and from which M. Majendie has seen great benefit result in his own practice.

Mode of Preparing Strychnine.

Dissolve the alcoholic extract of nux vomica in water, and add to the solution subacetate of lead in a fluid form, until precipitation ceases. The superfluous bodies being separated in this manner, the strychnine remains in solution, with a portion of colouring matter, and sometimes with an excess of acetate of lead. The lead is to be separated by sulphuretted hydrogen: then filter, and boil the liquid with magnesia; which, combining with the acid, yields a precipitate of strychnine and brucine. This is to be washed with cold water, and re-dissolved in alcohol, in order to separate the access of magnesia, and then by evaporating the alcohol we get a mixture of strychnine, brucine, and colouring matter. The whole is macerated in a small quantity of weak alcohol, which readily dissolves the two latter bodies, while the strychnine remains in the form of a powder. It is taken up again by boiling in rectified alcohol; which, being evaporated, deposits the strychnine in a crystalline form. We must take care to leave a little alcoholized water, in order to retain what remains there may be of the brucine. The strychnine may be obtained still purer, by renewing the crystallization. The sign of its purity is its not reddening with nitric acid, a degree almost unattainable in strychnine procured from nux vomica. That obtained from St. Ignatius' bean is purer; but the purest, and most easily obtained, is furnished by the upas.†

* An *once* is 7 drachms 52½ grains, by Troy weight. See the scale for reducing the French Weights and Measures to the English standard, at the end of Majendie's "Formulary," translated by Mr. Houlton.

† For other methods of preparing Strychnine, see Majendie's Formulary, or the Journal of the Royal Institution.

Sensible and Chemical Properties.

Strychnine obtained in this way presents itself under the form of minute crystals, which, by the aid of the microscope, are found to consist of four-sided prisms, terminated by pyramids with four depressed faces. When rapidly crystallized, it is white and granular, intolerably bitter, and leaving an impression on the organs of taste like that of some metalic salts; it has no smell, and undergoes no alteration by exposure to air; it is neither fusible, nor volatile; suffering decomposition and carbonization at the point of fusion, which is at a degree of heat below that required for the destruction of most vegeto-animal matters.

Exposed to the naked fire, it swells, blackens, and gives out an empyreumatic oil, a small portion of water and acetic acid, some indications of carbonic acid gas, carbonated hydrogen, and carbonate of ammonia. Distilled with the deutoxide of copper, it yields a large quantity of carbonic acid and azote.

According to Messrs. Dumas and Pelletier, the mean of two analyses of strychnine is, per hundred parts,*

Carbon	78.22
Azote	8.92
Hydrogen	6.54
Oxygen	6.38
	100.06

Strychnine is of all vegetable principles that which contains the most azote. It is nearly insoluble in water, requiring 6 667 times its weight at a temperature of 10°, but of boiling water half the quantity will dissolve it. This will appear remarkable, if we consider the intense bitterness of its taste, which will be still distinctly perceptible, if a solution of strychnine made in cold water, and consequently not containing above $\frac{1}{6000}$ part of its volume, be diluted in a hundred times the quantity of the same fluid. Its principal chemical characteristic is its readiness to form neutral salts by uniting with acids.

According to recent experiments of Pelletier and Caventon, the above-mentioned process indicates, in nux vomica, the presence of two alkaline principles, the one *strychnine*, the other *brucine*, which has already been found by the same chemists in the false angustura bark. To obtain strychnine pure, it is necessary to crystallize it repeatedly in alcohol; the other principle, the brucine namely, being more soluble in this menstruum, and crystallizable with difficulty, remains in the alcoholic mother water. It is unfortunate that the bean of St. Ignatius [S. sancti Synatii] is so rare an article in commerce, as the strychnine contained in it is nearly free from brucine, and would be readily obtained from it in a state of purity. The presence of brucine with the strychnine is, however, of no great importance, as it possesses the same properties, though less energetic.

Action of Strychnine on the Animal System.

The action of strychnine on man and the lower animals, is similar to that of the alcoholic extract of nux vomica, but more powerful.

* See "Recherches sur la composition élémentaire des bases salifiable organique, par M. M. Dumas et Pelletier."

Medicinal Employment.

As a remedy, it is applicable in the same cases as the resin of nux vomica; and it might never be necessary to have recourse to strychnine, if the extracts of the nux were always prepared in the same manner, and exempt from those variations in their effects, which result from peculiarities in their mode of preparation. In consequence of its greater uniformity in this respect, it is in general preferable. Both in Germany and Italy, accounts have been published of its successful employment.* But perhaps the most satisfactory are those for which we are indebted to Dr. Bardsley.

Mode of employing Strychnine.

Pills of Strychnine.

Take of,	Very pure strychnine . . .	2 grains.
	Conserve of roses	½ gros.

Mix accurately and divide into 24 equal pills.

Tincture of Strychnine.

Take of,	Alcohol at 36°	1 once.
	Strychnine	3 grains.

Dose from 6 to 24 drops in draughts, or common drink.

The following mixture has frequently been used.

Mixture of Strychnine.

Take of,	Distilled water	2 onces.
	Very pure strychnine . .	1 grain.
	White sugar	2 gros.
	Acetic acid	2 drops.

Five *grammes* to be taken morning and evening.

Salts of Strychnine.

United with acids, this substance forms salts, which are crystallizable, and for the most part soluble. This latter quality must therefore be borne in mind, when giving strychnine in common drink, for lemonade and all acids very much increase its activity. The subcarbonate of strychnine is sparingly soluble.

The SULPHATE is soluble in less than ten parts of cold water; it crystallizes in small transparent cubes if neutral, and in needles if there be a preponderance of acid. Its taste is extremely bitter. It is decomposed by every soluble salifiable basis. It undergoes no alteration by exposure to the air. Heated at a temperature of 100° it loses no part of its weight, but becomes opaque. At a higher temperature it fuses, and resolves itself into a mass, after suffering a loss of 3 per cent. If the heat be further augmented it decomposes. It consists of

Sulphuric acid	9.5
Strychnine	90.5
	100.

* By Cramer of Bonn, and Diffenbach of Germany—and particularly by Cattaneo, who has published his observations in Omodei's *Annali Universali.*

According to MM. Dumas and Pelletier, 100 parts of the base saturate, 10.486 of acid.

The HYDROCHLORATE is still more soluble than the sulphate; it crystallizes in needles, which viewed through a lens, appear to be quadrangular prisms; when exposed to a temperature at which the base is decomposable, it gives off muriatic acid.

The PHOSPHATE can be obtained in a perfectly neutral state, only by double decomposition. It crystallizes in four-sided prisms.

The NITRATE is easily obtained, by dissolving strychnine in acid highly diluted. Upon evaporation, it crystallizes in needles, of a pearly aspect.

This salt is much more soluble in hot than in cold water, and its action is more violent than that of the strychnine itself.

It forms very soluble salts also with the acetic, oxalic, and tartaric acids, susceptible of crystallization, especially if the acid be in excess. The neutral acetate is very soluble, and does not readily crystallize. The hydrocyanic acid forms with this base a crystallizable salt.

The SUBCARBONATE is obtained in the form of white flakes.

Boiled with iodine it forms an IODATE and HYDRIODATE.

A large proportion of acid combined with a very small quantity of strychnine, would form a medicine possessing the double property of acting on the nutrition of the organs, and of exciting the nervous system.

Action of the Salts of Strychnine.

The salts of strychnine, in consequence of their greater solubility, are more active, and consequently more intensely poisonous than their base.

Mode of Employment.

When the patient is habituated to the action of strychnine, it may sometimes be advantageous to substitute the salts for the strychnine itself, without increasing the dose. M. Majendie has used none of the salts except the sulphate, which has produced most decided relief in a case of paraplegia given in a dose of a twelfth of a grain.

Dr. Bardsley, whose reports we have already mentioned, commenced his experiments on the medicinal properties of *nux vomica* with the extract, but owing to the uncertainty of its strength and variation in its effects, according to slight differences in the mode of preparation, he was soon led to relinquish its use in favour of strychnia, the action of which is more uniform and certain. *Strychnia*, exhibited in larger doses than previously were considered safe, and persevered in with laudable zeal and patience, has effected in his hands very considerable good in various cases of *paralysis, chronic diarrhœa*, and *amenorrhœa*. Thirty-eight cases of palsy of different kinds are mentioned in Dr. Bardsley's work as having been treated with strychnia. Of these, two only received no benefit; several were more or less relieved, but the great majority were wholly cured. We shall extract one or two of the most instructive cases.

"MARY MITCHELL, aged 30 years, admitted 28th March, 1824.

"She has entirely lost the power of the left side, with diminished sensibility. Complains also of occasional severe headache, and is liable at times to sudden attacks of vertigo. Her articulation is much impaired.

Urine and fæces passed involuntarily in bed. Corner of the mouth much drawn to the right side, pulse 86, rather feeble. Countenance pallid. Sleeps ill. The attack occurred about three months ago, shortly after being delivered of twins, and has gradually increased. She attributes her complaint to over-fatigue and cold, when far advanced in pregnancy. Has used several remedies, but is ignorant of their nature. Ordered five leeches behind each ear, a blister to the nape of the neck, and a dose of the common purging mixture of the house. April 1st. Leeches bled freely, and blister discharged well, with relief to pain in the head. Several copious stools obtained from purgative. To commence with the twelfth of a grain of strychnia, in the form of a pill, twice a day. 4th. Symptoms unchanged. Strychnia pill to be taken three times in the day. 7th. Head remains free from uneasiness. No perceptible effect from alkali. 10th. The dose of strychnia to be increased to the eighth part of a grain, three times a-day. Bowels regular. 14th. The alkali has not as yet occasioned any manifest effect upon the system. The fourth of a grain to be exhibited three times in the day. 20th. Has again complained of slight pain in the head, but without vertigo. She states that she experienced yesterday a slight sense of prickling in the paralytic members, which continued for some time after each dose of the pills. No medicine required for bowels. Leeches to be repeated. 24th. Pain in the head very trifling since repetition of leeches. To continue. 27th. She appears to possess much more feeling in the affected side, as well as increased power over the paralyzed muscles. Makes no complaint of pain in the head this morning. Half a grain of strychnia to be taken twice in the day. 30th. On the second day after the exhibition of the alkali in this proportion, the patient experienced smart convulsive twitchings of the muscles of the diseased side. They are now present. May 3d. She can move the paralytic limbs much better, and begins to feel conscious when the bladder and rectum are evacuated. To take one grain of strychnia twice a-day. 6th. Head became affected with stupor and vertigo, and rigid contractions of the muscles of both sides of the body supervened to the employment of the third dose of the alkali in the proportion noticed in the report of the 3d. This quantity, however, was repeated yesterday and also this morning, and has been unattended by the former severe effects of the medicine. The patient has regained a considerable degree of power over the leg and arm, and the tone of the sphincters of the bladder and rectum is much restored. Not deeming it prudent to increase the dose of the alkali, she was directed to continue the one grain twice in the day. 14th. This dose now occasions no inconvenience. To continue the strychnia in doses of half a grain, three times daily. 17th. She is now much better; can hold a cup to her mouth when she wishes to drink, and also raise her left leg from the bed. She sits up during the day, and regularly asks for the bed-pan when she requires it. Speech more distinct. Pills to be continued. 20th. Continues to improve. To persevere with the pills. 28th. From the date of the last report up to the present period, her amendment has been rapid, for she now not only supports herself in the upright posture with the aid of crutches, but even walks with them from one bed to the other. Her strength, articulation, and general health are much improved: appetite keen. She expressed a strong desire to leave the hospital, from a con-

viction that change of air would effect her restoration to perfect health. I endeavoured to persuade her to remain as an in-patient for a short time longer, but without success. She was accordingly discharged, greatly relieved, at the first meeting of the weekly board, with a request on my part that she would inform me in case any relapse of her ailment should occur. I heard from her in about two months after her discharge from the hospital, and was glad to find that she had recovered the perfect use of the paralytic members, and could attend to the affairs of her family as well as at any former period of her life.

"REMARKS—In this case the strychnia was very serviceable, and indeed, the patient's recovery was fairly attributable to a persevering use of this active remedy. The twelfth of a grain of the alkali was first exhibited twice a day, and this proportion was increased at regular intervals to the extent of one grain twice a day; but it was found that the patient could only take half a grain thrice in the day without experiencing a slight degree of inconvenience. The appetite was much improved during its exhibition.

"SAMUEL OGDEN, aged 56, admitted 21st June, 1824. He has been paralytic for more than four months, having lost the entire power of the limbs of the right half of the body; and the muscles of that side have not recovered their former bulk and plumpness. He has been addicted to great irregularities in his general mode of living. Complains of pain in front part of the head, accompanied by vertigo. Speech rather inarticulate. Memory slightly impaired. Urine and fæces are both involuntarily and unconsciously discharged. Appetite indifferent. Pulse feeble. Countenance somewhat sunk. Six leeches were ordered to each temple, and a blister to the nape of the neck. To take three ounces of the Mistura Sennæ Composita immediately, and to repeat the dose every three hours until the bowels have been freely evacuated. 23rd. Head relieved by leeches and blister. Several copious stools procured by a second dose of the purging mixture. To commence with one-twelfth of a grain of strychnia in the form of pill twice a day. 26th. Head continues free from pain. Bowels constipated. Paralytic parts remain in the same state. Dose of strychnia to be increased to the one-sixth of a grain three times a day, and the purging draught to be exhibited on alternate mornings. 29th. The only effect of the medicine as yet perceptible is an occasional sensation of heat along the spine. Bowels kept regular by draught. Dose of strychnia to be increased to the one-fourth part of a grain three times a day. July 4th. Slight convulsive twitchings of the paralyzed members. Head remains free from uneasiness. Thinks he possesses a little more feeling in the bladder and rectum. Dose of strychnia to be increased to half a grain twice in the day. Slight tetanic symptoms have been present after each dose of the medicine, but they are by no means alarming, or of long continuance. There appears to be some improvement in the affected limbs, for he can now raise both the arm and leg with a little assistance, which he was quite incapable of effecting on his admission. This circumstance affords him great satisfaction, and inspires him with hopes of recovery. Half grain pill to be taken three times a day. 7th. This quantity was more than the patient could bear, as it produced vertigo, stupor, pain at scrobiculus cordis, irregular convulsive startings both of the sound and paralyzed parts, tendency to syncope,

weak pulse, and extreme debility. The pill was therefore ordered to be given only twice a day. He is now capable of gently moving both the affected arm and leg, and of retaining, during the day, his urine and fæces. To continue the pills. 10th. The diseased side improves. To persevere with the pills. 13th. The patient can now move both the arm and leg in several directions, and also support himself in the upright posture, by the help of a stick in the left hand. To have four ounces of wine daily, and to continue the pills. 17th. Yesterday, with the assistance of crutches, he walked more than once across the ward, and he has acquired almost a full command over the muscles of the rectum and bladder. Pills to be continued. Wine to be increased to eight ounces in the day. The pills were regularly taken until the 1st of August, and the patient's amendment appears, from the last report up to this period, to have been progressive. On his discharge, he could walk from one end of the large ward to the other by the aid only of a small stick, and the functions of the bladder and rectum were completely restored.

Remarks.—This case affords evidence of the remedial efficacy of strychnia in palsy, and points out in a striking manner the *peculiar* action of the alkali upon the paralytic members, since no other remedies, with the exception of a few leeches to the temples, a blister to the nape of the neck, and occasional doses of aperient medicine (on the patient's first admission) were employed. I had my doubts respecting the propriety of administering the alkali in this instance, as there was some reason to fear, from the previous intemperate habits of Ogden, that the hemiplegia was owing to disorganization of the brain; hence I adopted the precaution of relieving the vessels of the head before I commenced with the use of the strychnia. One grain during the day was as much as he could take with safety, for when the dose was increased to a grain and a half daily, very unpleasant effects followed. It would have been improper to have pushed the remedy beyond the limits pointed out by the symptoms. It may be well to notice the *sensation of heat along the course of the spine* more than once experienced by the patient, and first mentioned by himself, without the question having ever been put to him, as it tends to confirm the opinion before stated, respecting the peculiar action of the strychnia upon the spinal cord.

"John Prince, 29 years of age, spinner, admitted an in-patient September 13, 1824, was seized about six months ago with loss of power in the lower extremities, after bathing, whilst the body was much heated with exercise. He is now incapable of motion without the aid of crutches. He passes his urine and fæces involuntarily. The spine is free from pain. His strength is much reduced. Appetite bad. Pulse seventy-two and rather feeble. I directed him to take pil. hydrargyri four grains each night, with a saline aperient on the following morning, for the first ten days. On the 24th, I commenced with the strychnia, in the dose of a sixth of a grain, three times daily. October 4th. The alkali has not produced any effect upon him. Appetite somewhat improved. In other respects he remains in the same state as on his admission. October 10th. Strychnia augmented to the fourth of a grain every fourth hour. 14th. Has experienced severe convulsive twitchings in the affected limbs. He is sensible of an increase of power in his inferior extremities, and wishes to rise and make trial of his crutches.

22d. Is very much better: strychnia to be taken in the proportion of half a grain three times daily. November 4th. During this interval the alkali has been attended with great benefit. He is now capable of retaining both his urine and fæces, and of walking from one end of the ward to the other with the aid of a small stick. His appetite is good, bowels regular, and spirits cheerful. To continue the alkali. 16th November. He is entirely cured. In order to show the pupils of the hospital what he could do, he ran from one end of the long gallery to the other. I ordered him to be discharged at the first meeting of the weekly board. I had an opportunity of seeing this patient several times after he left the house, and was glad to find that he continued to enjoy the perfect use of his lower limbs."

The other cases are so nearly counterparts of these, that the above may be taken as sufficient proof of the power possessed by this medicine of restoring nervous energy to paralytic limbs.

"Strychnia possesses an advantage over some other internal remedies, for it does not impair the energy of the stomach, but is rather serviceable in promoting appetite and digestion. This was very evident in several of the cases detailed. When it is decided upon to administer the strychnia, it is proper to commence with a proportion not greater than the eighth of a grain twice in the day. This quantity may be gradually increased to the sixth, fourth, or even half of a grain at the same intervals. The first effects of the remedy must be carefully noticed, and should symptoms of an unpleasant nature occur, it must be *immediately* suspended. After a short time its use may be resumed, and continued, in slowly augmented doses, so long as the judgment of the practitioner may approve. By attention to these points, although no benefit may accrue from the strychnia, we may be sure that no injury will attend its exhibition."

Medical practitioners frequently meet with cases of chronic diarrhœa which are extremely difficult to treat, the discharges refusing to be restrained; in such cases Dr. B. has used strychnia with marked success. Several other physicians have also found it beneficial, and their published reports corroborate Dr. Bardsley's account. The dose found most advantageous is one-sixth to one-fourth of a grain three times a-day.

Twelve cases of amenorrhœa in which strychnine was given are recorded by Dr. Bardsley, and the results of the treatment were most satisfactory; nearly the whole being cured. The medicine was given in doses of from one-sixth to one-fourth of a grain three times a-day. In one case half a grain was taken twice daily.

"The above cases appear sufficient to show the remedial virtue of strychnia, in some instances of amenorrhœa. This is in a great measure owing to a power which the alkali possesses of stimulating the vessels of the uterus, and of improving the *tone* and *vigour* of the system. I have remarked a confirmation of this fact in two or three instances of females, with whom the menses have returned during the use of the strychnia, even after they had disappeared for more than a year and a half. I should advise the *conjoint exhibition* of mild laxatives with the alkali in this affection, when the bowels, as is most commonly the case, are constipated.

"Such are the results of my experiments with strychnia, which are

calculated to set forth the *real* claims of this alkali to the notice of the profession, as a remedy in certain diseased conditions of the system. I think that I may venture to draw from them the two following conclusions. First, that strychnia, *cautiously administered*, is a safe and useful remedy in paralysis. Secondly, that it will *occasionally* be found serviceable in *chronic diarrhœa and amenorrhœa.*"

MODE OF PREPARING BRUCINE.

In order to obtain BRUCINE, the false angustura bark is subjected to a process similar to that directed for the preparation of strychnine from nux vomica, with this difference, that in the present case the magnesian precipitate must not be so elaborately washed, brucine being much more soluble in water than in strychnine. By evaporating the alcoholic liquors employed for the treatment of the magnesian precipitate, the brucine is readily obtained in a resinous form, not being yet sufficiently pure to crystallize. In its purification it must be combined with oxalic acid, and this oxalate is to be treated with a mixture of alcohol at 40°, and ether at 60°. In this way the colouring matter will be dissolved, and the oxalate of brucine will remain under the form of a white powder: it may be decomposed by magnesia, and the brucine separated by alcohol. In evaporating the alcoholic solution in the open air, brucine will be obtained in a crystallized form: if heat be employed it will be obtained fused, but not less pure.

Properties of Brucine.

Its taste is intensely bitter; it is sparingly soluble in water, although more so than strychnine. It dissolves in 500 times its weight of boiling water, and in about 850 of cold water. When regularly crystallized it presents itself under the form of oblique prisms, with parallelogrammic bases. This form of brucine is a true hydrate, its affinity for water being considerable; whereas pure strychnine can never pass to this state. Brucine loses a considerable quantity of water by fusion.

Two hundred parts of brucine thus crystallized yield of

Water	37 parts.
Residue	163

One hundred and sixty-one parts crystallized in alcohol, give of

Water	27 parts.
Residue	134

which establishes the constitution of the hydrate, taking the mean to be

Water	21.65 parts.
Brucine	100.

It fuses at a temperature nearly equal to that of boiling water, and in cooling assumes the consistence of wax. It combines with acids, and forms with them neutral salts, of which the greater part are susceptible of regular crystallization. On applying concentrated nitric acid, it acquires an intense crimson colour, which passes into a yellow, by the application of heat. If, while in this state, a solution of the proto-hydrochlorate of tin be added, we have a magnificent violet-coloured precipitate, which phe-

nomenon is peculiarly characteristic of brucine; so that if strychnine obtained from nux vomica exhibits a similar appearance, on the addition of the proto-hydrochlorate, we may be assured that it is owing to the presence of brucine.

The mean result of two analyses of this substance, obtained from the brucea antidysenterica and fused in vacuo, gave as its composition,

Carbon	75.04
Azote	7.22
Hydrogen	6.52
Oxygen	11.21
	100

Action on the Animal System.

This is analogous to that of the strychnine, but less intense, being in the proportion to that of pure strychnine as 1 : 12. Or, according to M. Andral, jun., 6 grains of brucine are equal to one of impure, and a quarter of a grain of pure strychnine. Four grains of brucine were required to kill a rabbit: and a strong dog having taken the same quantity experienced severe attacks of tetanus, but recovered. It may, therefore, be a convenient substitute for strychnine, as it will not act with so much energy.

Manner of Administration.

It may be given either in pills or tincture, increasing the dose gradually. In medical use that which is obtained from the bark should be preferred; as that furnished by the nux vomica is rather apt to be mixed with a portion of strychnine, which increases its power, and deranges our calculation as to the effects.

Cases for the Exhibition of Brucine.

As it possesses the properties of strychnine, in a milder degree, it may be given to the extent of one, two, or even three grains, without apprehension as to the consequences, in the same cases as the preparations of nux vomica are found to benefit. It is probable that much larger doses may be given, but we must be attentively upon our guard. M. Andral, jun. has given it in cases of palsy with advantage from half a grain to five grains, and Dr. Bardsley in still larger doses. M. Majendie has administered it successfully in two cases of atrophy, one of the arm, and the other of the leg. The patients took six pills daily of one-eighth of a grain.

Mode of prescribing Brucine.

Pills of Brucine.

Take of, Pure brucine . . . 12 grains.
Conserve of roses . . ½ gros.
Mix accurately and divide into 24 equal pills.

Tincture of Brucine.

Take of, Alcohol at 36° . . . 1 once.
Brucine . . . . . 18 grains.
From 6 to 24 drops may be given in ordinary drink.

Stimulating Mixture.

Take of, Distilled water . . . 4 onces.
Very pure brucine . . 6 grains.
White sugar . . . 2 gros.
Mix.—Five *gros* to be taken night and morning.

Salts of Brucine.

SULPHATE. This salt crystallizes in long needles, resembling four-sided prisms, terminated by extremely delicate pyramids. It is very soluble in water and in alcohol: its taste is exceedingly bitter. It is decomposed by potash, soda, ammonia, baryta, strontian, lime, magnesia, morphine, and strychnine. The supersulphate crystallizes more readily than the neutral salt, and is formed of

Sulphuric acid . . . 8. 84 . . 5.
Brucine . . . . 91. 16 . . 51. 582.

HYDROCHLORATE. This salt crystallizes in four-sided prisms terminated by an oblique surface. It is not acted upon by the air, and is very soluble in water. It is decomposed by sulphuric acid, while the nitric acts on and even destroys the brucine. It consists of

Acid . . . . . 5.953 . . 4.575
Brucine . . . . . 94.046 . . 72. 5

The PHOSPHATE is also crystallizable, very soluble, and slightly efflorescent: the acetate, tartrate, and oxalate may also be crystallized.

The NITRATE is a mass bearing some resemblance to gum.

The SULPHATE and MURIATE of brucine being more soluble than brucine itself, probably possess certain advantages, and have in all likelihood greater activity: they may therefore be employed instead of the preparations above described.

Brucia has been tried by the same physician who has contributed so much to settle our opinions upon the value and mode of operation of strychnia, and to his work we are indebted for the following cases.

"JOSEPH ANDREWS, thirty-six years of age, a weaver. He had laboured under hemiplegia of the right side for six months. At the time of admission, he complained of entire loss of power, and partial diminution of feeling in the right upper and lower extremity. The head was by no means free from pain, but the mental faculties did not seem to be impaired. Speech so much injured as to be almost unintelligible. Urine and fæces involuntarily discharged. Countenance full and plump. No emaciation of body. Appetite rather keen. Sleeps tolerably well, pulse seventy-six, of moderate strength. The patient says, that the attack occurred rather suddenly, but that he had experienced a sense of weight and pain in the head for some months previously to its occurrence. By his own account, he has never been addicted to excess in spirituous liquors, or any great irregularity in his general mode of living. Twelve ounces of blood was ordered to be removed from the nape of the neck by cupping; two ounces of senna mixture to be exhibited immediately, and repeated as the state of the bowels might render necessary. August 18. Head feels lighter and more comfortable since the loss of the blood, bowels freely moved by draught, and are now

regular without the aid of medicine. He was directed to take one grain of brucia in the form of pill night and morning. 20th. No effect at present from pill. Let it be taken in the same proportion three times in the day. 24th. Does not seem to be at all affected by the alkali. Bowels have become confined. Opening draught to be repeated. 26th. No twitchings of the extremities at present. Pill to be taken four times in the course of the day. A scruple of the compound purging powder of the house to be given immediately. 31st. Says that the affected leg and arm have been twitched considerably during the last two nights, almost leading him to suppose that something was alive in them. Bowels moved by powder. Appetite quite voracious. Two grains of brucia to be used night and morning, and its effects to be carefully observed. September 3rd. His right leg is at times forcibly moved in bed without any effort on his part. He imagines that he has already more power in the paralytic side than on admission. Bowels rather confined. Pills to be continued, and purging powder to be repeated. 6th. Complains now of frequent convulsive twitchings in paralytic members, which occur mostly in less than an hour after taking the pills. Last night he was suddenly seized with sickness, vertigo, palpitation, and griping in the bowels, so that the pill was omitted. This morning he seems quite as well as usual. The pills to be continued. 9th. Is now capable of raising his right leg in bed and of extending the right arm. Head continues free from disturbance. Two grain pill to be taken three times in the day. 12th. Action of the alkali continues to increase. He is much improved, and is now sitting up in bed, He can point his foot, and almost support himself in the erect position with only the aid of his stick. Pill to be taken four times in the day. 15th. Twitchings are now very severe. By gently elevating the heel from the bed, the leg is immediately drawn up towards the thigh. This morning, with his stick in his hand, he made a shift to reach the bed of a fellow-patient. Pill to be taken five times daily. 20th. The two grain pill could not be continued five times in the day, as it produced considerable cerebral disturbance. October 1st. The exhibition of eight grains daily has been continued since the last report, and the patient has gradually acquired an increase of power over the muscles of the affected limbs. His speech continues rather indistinct, and he states that he has experienced some threatening of a return of pain in the head. Cupping to the amount of eight ounces to be immediately adopted. Pills to be continued. Appetite excellent. Looks cheerful, and has rather gained than lost flesh. 7th. Improves slowly. Pills taken regularly with an evident powerful influence on the nervous system. Epigastrium has been slightly painful after eating, and also on pressure, during the last two days. Eight leeches to be applied to the seat of pain. To continue the pills. 12th. The patient is so far recovered as to be able to pass from one bed to another. He was directed to exert the paralytic members, for exercise seems to assist the action of the remedy in promoting a restoration of muscular power. Pills to be continued. 17th. Much the same as at last report. The pills still manifest their influence on the system by the continuance of the twitchings in the affected members. He experienced rather a severe fall on the face yesterday by losing his balance in attempting to cross the ward. His general health is much improved. November 2d.

During this interval, he has rapidly improved, having obtained nearly a complete return of power and feeling in the right side. As he was anxious to leave the hospital, I directed him to be made an out-patient, with orders to attend at the Dispensary once in the week. The last report entered into my case-book states, 'that Andrews was discharged cured on the 24th November; and that he was able to follow his usual employment of weaving.'

"REMARKS.—In this case, the pain in the head at first complained of by the patient, demanded for its removal the abstraction of some blood from the neighbourhood of the sensorium, before commencing with the alkali. The action of this substance on the system was analogous to that produced by the strychnia, though much milder, for he was capable of taking eight grains daily without inconvenience. Shortly after the occurrence of convulsive twitchings in the paralytic limbs, marking the influence of the remedy upon the system, an evident improvement took place, which was progressive, until the patient's health was completely restored.

"EDWARD SHACKLETON, aged forty-one, admitted a home-patient, December 4th, 1826, carter.

"This patient had experienced for several months a sense of numbness in his feet and legs, which ended in complete paraplegia. The lower extremities were cold, and his fæces and urine were passed involuntarily. Appetite said to be much impaired. Head free from pain. He had been a remarkably stout man, and can assign no other reason for his present ailment than frequent exposure to wet and cold. I commenced the treatment with the exhibition of a grain and a half of brucia twice daily. 16th. No improvement as yet perceptible. Bowels open. To take two grains of the alkali three times in the day. January 10th, 1827. He is much improved since the last report. He has felt, during the last two days, a tingling sensation in the thighs and legs, in about half an hour after taking each pill. To continue the use of the alkali in the same proportions. 26th. He can now stand erect, and by the aid of crutches walk from one ward to another. Appetite better. Pills to be taken four times daily. February 16th. Has much greater power over the rectum, bladder, and inferior extremities. The prickling sensations have been more severe since the dose of the brucia was increased. To continue the pills. March 10th. During this interval, he has improved considerably in strength. He can walk steadily and firmly, and retain both his fæces and urine several hours. Appetite excellent. Pills to be continued. 24th. He appears to be in perfect health. He was accordingly discharged cured.

"The ten cases recorded by Dr. B. have been selected from some others, as affording the best evidence of the remedial value of brucia in paralysis. The results of these trials with brucia lead me to recommend it as a valuable medicine in that affection. The action of this alkali upon the system is (as before observed) analogous to that of strychnia, but less powerful; hence it is a preferable remedy *in paralytic attacks accompanied with much cerebral disturbance.* When the brucia is employed, it is prudent to commence with a proportion not greater than a grain, taken twice daily, which may be cautiously advanced to the exhibition of two grains, three or four times in the day. In the case of Andrews,

which I have detailed, it appears, that he was incapable of taking a two-grain pill five times daily, without experiencing symptoms of an unpleasant nature. I have noticed the same result, too, in some other instances. With respect to the length of time necessary to give the brucia fair trial in paralytic affections, I should say, from my experience with this remedy, that unless a marked advantage accrue from its use in the course of five or six weeks, it may be very properly laid aside."

There are various other species of strychnos, several of which it would seem might well claim admission into our lists of materia medica, such as the S. *colubrina*, S. *pseudo-quina*, &c. S. *potatorum*, the *clearing-nut*, is a valuable plant in Hindostan. The pulp of the fruit when ripe is eaten by the natives, and the seeds are dried and sold in every market in the East Indies to clear muddy water—a precious quality in a country where the water is rarely of a good quality. Hence the common name of *clearing-nuts*. The natives never drink well-water if they can get pond or river water, which is always more or less impure. One of the seeds is rubbed very hard for a minute or two round the inside of the vessel containing the water, which is generally an unglazed earthen one, and the water left to settle. In a very short time the impurities fall to the bottom, leaving the water clear and perfectly wholesome. The nuts are constantly carried about by the more provident part of our officers and soldiers in time of war, to enable them to purify their water; they are easier to be had than alum, and are probably less hurtful to the constitution. (*Loudon.*)

Fraxinus Ornus.

Clark Pinx.

FRAXINUS ORNUS, *vel* ORNUS EUROPÆA.

Manna, or Flowering Ash.

Class XXIII. POLYGAMIA.—*Ord.* II. DIŒCIA.

Nat. Ord. SEPIARIÆ, *Lin.* JASMINEÆ, *Juss.* OLEINÆ, *De Cand.* OLEACEÆ, *Burn.*

GEN. CHAR. *(Fraxinus.)* Hermaph. *Calyx* 0, or 4-parted. *Corolla* 0, or 4-petalled. *Stamens* 2. *Pistil* 1. *Samara* 1-seeded, lanceolate.—Female. *Pistil* 1, lanceolate. *(Ornus.)* *Flower* united. *Calyx* 4-parted. *Corolla* 4-petalled. *Fruit* a winged samara of two cells.

SPEC. CHAR. *Leaflets* elliptic-oblong, pointed, bluntly serrated. *Flowers* with a corolla.

Syn —Fraxinus humilior sive altera Theophrasti, minore et tenuiore folio, *Bauh. Pin.* 416.

Fraxinus florifera, *Scop. Carn. n.* 1250.

Fraxinus Ornus, *Sp. Pl. Willd. v.* 4. 1102.; *Sm. Fl. Græc. Sibth. v.* 1. 4. *t.* 4. *Woodv. v.* 1. 105. *t.* 36; *Ehrh. Pl. Offic.* 270. *Arb.* 160.

FOREIGN.—*Manne, Fréne à fleur*, Fr.; *Manna*, Ital.; *Manna*, Sp,; *Manha*, Ger.; *Turenjeebeen*, Arab.; *Shirkhisht*, Hind.; *Orneiro*, Portug.

THIS tree, which greatly resembles our common ash, is a native of the warmest parts of Europe. It grows abundantly in Calabria, Sicily, and on the highest and most rocky mountains of Greece, and is one of the most elegant trees that adorn our lawns and pleasure-grounds; flowering in May and June. Our figure of this plant was taken from Dr. Sibthorp's "*Flora Græca*," one of the most splendid botanical works ever published in this country.

The *Ornus Europæa* is a low tree, very much branched, and

covered with a smooth grey bark. The leaves, which are smaller than those of the common ash, stand upon longish, channelled footstalks; are opposite, pinnate, and composed of several pairs of leaflets, with a terminal one; the leaflets are opposite, about an inch and a half long, and three-fourths broad, of an oblong shape, pointed at each end, unequally serrated, smooth, and of a bright green colour. The flowers are produced in loose panicles at the extremities of the branches, flowerstalks are suprade-compound, and scarcely the length of the leaves. The segments of the calyx are ovate; the corolla consists of four oblong, linear, pointed petals; the filaments are two, spreading, and supporting large yellow incumbent anthers; the germen is oval, with a very short style, and a notched stigma. The capsules are pendulous and compressed, and usually contain a single lanceolate cylindrical dark brown seed.

Fig. (A) represents a flower magnified; (*a*) the anthers; (*b*) the germen; (*c*) the capsules.

Manna is yielded by trees of different families, for although we are principally indebted to four species of ash, F. *ornus*; F. *rotundifolia*; F. *excelsior*; and F. *parviflora*; the larch, fir, orange, walnut, willow, mulberry, and the oak, also produce it. At Briançon, in France, manna is said to be collected from all sorts of shrubs; and the inhabitants observe that such summers as produce it in the greatest quantities, are very fatal to the plants. Their walnut-trees produce annually a considerable quantity; but if they happen to yield more than ordinary, they usually perish the following winter. From this it appears evident that manna is the extravasated juice of trees, and that they cannot afford to lose it: and what confirms this idea, is their secreting so much more when the summers are hot. The ancients were accustomed to find it on different species of trees; and therefore inferred that it was something wholly foreign to the tree: an error very easily embraced by those who were not aware that the nutritive juices of trees are nearly, if not wholly, the same.

"The Manna tree, (*Ornus Europæa, vel* Fraxinus *Ornus,*)"

says Prof. Cirillo,* "is common not only in Calabria and Sicily, but also on the famous mountain Garganus, situated near the old town of Sypontum, upon the Adriatic; and is mentioned even by Horace as an inhabitant of that mountain:—

Aut Aquilonibus querceta Gargani laborant,
Aut foliis viduantur Orni.

"In all the woods near Naples the manna tree is to be found very often; but for want of cultivation it never produces any manna, and is rather a shrub than a tree. The method by which the manna is obtained from the Ornus, though very simple, has been yet very much misunderstood by all those who have travelled in the kingdom of Naples; and among other things they seem to agree that the best and purest manna is obtained from the leaves of the tree; but this, I believe, is an opinion taken from the ancients, and received as an incontestable observation, without consulting nature. I never saw such a kind, and all those who are employed in the gathering of the manna know of none that comes from the leaves. The manna is generally of two kinds; not on account of the intrinsic quality of them being different, but only because they are got in a different manner. In order to obtain the manna, those who have the management of the woods of the Orni, in the months of July and August, when the weather is very dry and warm, make an oblong incision, and take a piece off from the bark of the tree about three inches in length, and two in breadth: they leave the wound open, and by degrees the manna runs out, and is almost suddenly thickened to its proper consistence, and is found adhering to the bark of the trees. This manna, which is collected in baskets, and goes under the name of *manna grassa*, is put in a dry place, because moisture and a damp atmosphere will soon dissolve it again.

"This first kind is often in large irregular pieces of a brownish colour, and frequently is full of dust and other impurities. But when the people want to have a very fine manna, they apply to the incision of the bark thin straw, or bits of shrubs, so that

* Phil. Trans. vol. 63. p. 234.

"Whether any of these mannas may be the product of the insect, which has got the appellation *chermes mannifera*, I know not; but the inquiry might be interesting. Major Macdonald Kinneir mentions, in his Geographical Memoir of Persia, p. 339, a sort of manna which the Persians call *guz*, and which may be procured in great quantities in *Louristan*, and in the district of *Khonsar* in *Irak;* he adds, that it is obtained from a shrub in appearance like a fennel, about four feet high, and is supposed to be produced by small red insects; these are seen in vast numbers under the leaves. Now this I should presume is the substance which, within the last few years, has engaged the attention of several scientific men of the Indian establishments; such as General Hardwick, Captain Edward Frederick, and particularly the admirable Dr. Wallich; the last-mentioned gentleman had only seen the insect which produces it in its larva state; though we know that the French entomologist Geoffroy had many years ago attributed to a species of *chermes*, the property of producing, both in the *larva* and *pupa* state, a sugary substance of a white colour; it appears that the animal is about the size of a domestic bug, and of a flattened oval form. Mr. Hunter informs us, that the *guz* seems to project from the abdomen of the animal in appearance like a tail, or bunch of feathers; but perhaps more resembling snow than any thing else. The animals are found on certain trees in Persia and Armenia; swarming in millions and generating this feathery-like substance, till it gets long and drops on the leaves, caking on them, and resembling beautiful bees' wax: the insects do not destroy the leaves they feed on."

Medical Properties and Uses.—The medical properties of manna are those of a mild cathartic, for which purpose it was formerly much used in practice. As, however, from one to two ounces of this medicine scarcely producing any effect on adults, it is now seldom employed alone; but combined with senna, neutral salts, and other purgatives, is often used to cover their taste. It is an innocent purgative in the hands of mothers, who frequently give it to their children in doses from one drachm to half an ounce dissolved in water; but, though mild in its operation, it is apt to produce flatulence and griping.

Off. Prep.—Confectio sennæ. *L. E. D.*
Enema catharticum. *D.*
Enema fœtidum. *D.*
Syrupus sennæ. *D.*

Valeriana officinalis

VALERIANA OFFICINALIS.

Great Wild Valerian.

Class III. TRIANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. AGGREGATÆ, *Lin.* DIPSACEÆ, *Juss.* VALERIANEÆ *De Cand.* VALERIANACEÆ, *Burn.*

GEN. CHAR. *Corolla* monopetalous 5-cleft, gibbous at the base. *Seed* 1, crowned with a feathery radiating pappus.

SPEC. CHAR. *Stamens* three. *Leaves* all pinnate; leaflets lanceolate, serrate, nearly equal.

Syn.—Valeriana sylvestris major, *Raii Syn.* 200; *Ger. Em.* 1075. *f.*; *Park.* 122.
Phu, *Column. Phytob.* 112. *t.* 114.
Phu parvum, *Matth. Valgr. v.* 1. 37. *f.*
Phu germanicum, *Fuchs. Hist.* 857. *f.*
Valeriana, *n.* 210. *Hall. Hist. v.* 1. 91.
Valeriana officinalis, *Lin. Sp. Pl.* 45; *Willd. v.* 1. 177; *Fl. Brit.* 38. *Eng. Bot. v.* 10. *t.* 698; *Curt. Lond. fasc.* 6. *t.* 3; *Hooks Scot.* 15; *Woodv. t.* 96. *Stokes, v.* 1, 96. *Fl. Dun. t.* 570.
PROVINCIALLY.—*Great Wild Valerian; Capon's-tail; Setwalle.*
FOREIGN.—*Valeriane; Valeriane Sauvage*, Fr.; *Valeriana Silvestre*, It.; *Valerian Officinal*, Sp.; *Wilde Baldrianwurzel*, Ger.; *Balderjan*, Russ. *Kozlki*, Pol.; *Fai so*, Jap.

THE great wild Valerian, Valeriana *officinalis* of Linnæus, or Valeriana *sylvestris major montana* of Bauhin, is a perennial indigenous plant, growing on the banks of rivers and ditches, and in dry mountainous woods and pastures; flowering from June to August.

The root of this species of Valerian is composed of several long, slender fibres, of a dusky brown colour, approaching to olive, that issue from one head. The stem is erect, furrowed, hollow, smooth, and branched; it rises to the height of three or four feet. The leaves are of a deep glossy green, serrated, a little hairy on the under surface, growing opposite, in pairs on foot-

stalks, and are all pinnated, but differ in different parts of the plant, in the number of leaflets. In the lower leaves there are generally ten pairs; in those on the stem nine; and towards the top five or seven only; hence the leaf, except towards the bottom of the plant, is always terminated by an odd leaflet. The radical leaves are larger, and stand upon long footstalks; the *pinnæ* are elliptical, and deeply serrated; the bracteas, or floral leaves, are lanceolate and pointed. The flowers, which are small, and of a reddish white colour, are disposed in large dense aggregates, or corymbiform panicles, at the extremities of the stem and branches, and contain both stamens and pistils, whereby the present species may at once be distinguished from the V. *dioica*. The calyx is a slight border, subsequently expanding into a crown for the seed. The corolla is tubular, with a protuberance at the base, and divided at the limb into five obtuse, somewhat unequal segments. The stamens are three, awl-shaped, and support oblong yellow anthers. The germen is inferior, oblong, having a thread-shaped style the length of the stamens, and terminated by a trifid stigma. The seeds are ovate-oblong, compressed, and crowned with a feathery pappus of ten rays.—Figs. (*a*) and (*b*) are two views of the corolla magnified.

The V. *locusta*, corn salad, or lamb's lettuce, is sometimes cultivated in gardens for salad, and of the Officinal Valerian there are two varieties; one growing in woods and moist places, the other on dry heaths and high pastures. Both sorts have been used indiscriminately, but the latter variety is esteemed of far greater efficacy than the marshy sort. It is principally distinguished by the leaves being narrower, and of a duller green; and by its stronger smell, and more humble growth.

This plant having till lately been generally regarded as the celebrated φου, or Valerian of Dioscorides, has been extensively employed as an article of the Materia Medica. Dr. Sibthorp, in his Greek tour, however, has ascertained that the real plant of the ancients is a distinct species, which he has figured and described under the name of Valeriana *Dioscoridis*.* It was

* See Sibthorp's Flora Græca, edited by Sir J. E. Smith, vol. i. t. 33.

gathered by the learned author near the river Linyrus in Lycia; and has a much more pungent and more durable, and yet less nauseous odour, than the plant here represented.*

Culture.—In Derbyshire, Valerian is planted in rows twelve inches apart, and the plants six inches asunder. Soon after it comes up in the spring, the tops are cut off to prevent its running to seed, which spoils it. At Michaelmas the leaves are pulled off and given to cattle, and the roots dug up, and cleanly washed, and the remaining top is then cut close off, and the thickest part slit down to facilitate their drying, which is effected on a kiln, after which they must be packed tight and kept very dry, or they will spoil. The usual produce is about 18 cwt. per acre.†

Qualities, and Chemical Properties.—The leaves have a saltish taste, but little or no smell. The roots, particularly the mountain sort, are bitter, subacrid, and of an aromatic and penetrating odour. The smell of the roots is very alluring to cats, and rat-catchers employ it to entice rats, who are also fond of it. Trommsdorff has examined the root of the Valeriana *Officinalis*. It loses three-fourths of its weight by drying. Distilled with water it yields a volatile oil, very liquid, and of a greenish white colour. Its odour is strong and camphoric; its specific gravity, at the temperature of 77°, is 0,9430; its taste is aromatic and camphoric, without being acrid. Nitric acid converts it into a resinous substance, or, if it be used in a sufficient quantity, into oxalic acid. The expressed juice of the roots has a strong odour, and is muddy. It lets fall a portion of starch. It contains a peculiar substance approaching the nature of extractive, soluble in water, insoluble in ether or in pure alcohol. It is precipitated from water by the salts of lead, silver, mercury, and antimony. The juice also contains a portion of gum. The roots, deprived of this juice, yield a portion of black-coloured resin, but consist chiefly of woody fibre.—*Annales de Chimie*, t. xx. p. 384.

* The *Greek Valerian*, also called *Jacob's Ladder*, a common ornament in rustic gardens, must not be confounded with the Valerian of Dioscorides. It belongs to a different genus (*Polemonium*,) deriving its name from the resemblance its leaves bear to the Officinal Valerian, but it has not been discovered in Greece.

† Loudon's Encyclopædia of Agriculture, p. 875.

Medical Properties and Uses, &c.—Valerian has long been esteemed an excellent remedy in various affections of the nervous system, especially in hysteria, chorea, and epilepsy; and when those diseases seem to depend rather on increased susceptibility than on organic derangement, it is frequently useful. Fabricius Columna first discovered its antispasmodic powers, having cured himself of epilepsy by the powdered root, when many other powerful medicines had failed.

Dr. Scopoli* relates the case of a young man who having become subject to epilepsy from fright, was shortly cured by the use of the valerian powder. M. Marchant† has also related many cases of its success in the same disease; and what is remarkable and well worthy of our attention is, that his patients voided large quantities of worms; a fact supported by the testimony of others. It has been found extremely beneficial in many cases of hysteria, and hemicrania, especially when combined with bark, or the volatile alkali; and conjoined with guaiacum, it is beneficially employed for strumous enlargement of glandular structures. Dr. Cullen strongly recommends the root of that which has grown in a dry calcareous soil for hysterical affections. Dr. Withering speaks of it as a useful remedy for habitual costiveness; and, although its aperient qualities can no more be relied on than its diuretic, or anthelmintic ones, we consider it to be among the most powerful of the vegetable antispasmodics. The powder is the best mode of administration; and Lewis justly remarks that its taste is best covered by a suitable addition of *mace*.

Dose.—When given in substance the dose may be from ℈j to ʒj twice or thrice in twenty-four hours: of the ammoniated tincture, which is a better preparation than the simple tincture made with proof spirit, the dose is from ʒj to ʒij.

Off. Prep.—Tinctura Valerianæ. *L. D.*
Tinctura Valerianæ Ammoniata. *L. E. D.*
Extractum Valerianæ. *D.*
Infusum Valerianæ. *D.*

* See Scopoli Flora Carniolica.
† Histoire de l'Acad. Roy. des Sciences, an. 1706.

a
b
c

DELPHINIUM STAPHISAGRIA.

Palmated Larkspur, or Stavesacre.

Class XIII. POLYANDRIA.— *Order* III. TRIGYNIA.

Nat. Ord. MULTISILIQUÆ, *Lin.* RANUNCULACEÆ, *Juss.*, *De Cand.*, &c.

GEN. CHAR. *Calyx* irregular, petaloid, deciduous, the upper sepal bearing a spur-shaped nectary. *Petals* 4, the 2 upper prolonged at the base into appendages contained within the spur.

* * *Three-capsuled.*

SPEC. CHAR. *Spur* very short, *pedicels* twice as long as the flowers, and *petioles* hairy. *Leaves* palmate, with the lobes obtuse.

Syn.—Staphisagria, *Raii Hist.* 705; *Park.* 225; *Ger. Em.* 495; *Bauh. Pin.* 324; *Dod. Pempt.* 336; *Fuchs.* 784.

Delphinium Platani folio, Staphisagria dictum, *Tourn. Inst.* 428; *Boerh.* 1. 301.

Delphinium Staphisagria, *Lin. Sp. Pl. Willd.* 2. 1226; *Scop. Carn.* 2. *n.* 652; *Woodv.* 417. *t.* 154. *Sm. Fl. Græc. Sibth.*; *Stokes*, 3. 215.

FOREIGN.—*Staphisagre*, Fr.; *Stafisagria*, It.; *Piogenta*, Sp.; *Stephanskraut laus korner*, Ger.

THIS handsome plant is a native of Provence, Languedoc, and many other parts of the south of Europe. It is a biennial, and was cultivated here by Gerarde in 1596; it flowers from April to August.

Stavesacre grows to the height of one or two feet; the stem is round, downy, erect, simple, and of a purplish hue. The lower leaves are nearly as large as those of the vine, palmated, and divided into seven lobes, which are oblong, ovate, veined, downy, sometimes acutely indented, and of a pale green colour; those on the upper part of the stem are gradually smaller, usually 5-lobed, and supported on long downy footstalks of the

colour of the stem. The flowers are bluish or purplish, supported on long footstalks, and form an elegant open spiciform raceme at the extremity of the stem. The calyx is petaloid and deciduous, the upper sepal extended behind into a long tubular spur; the corolla is usually divided into four petals placed in front within the row of sepals; the two superior are narrow, small, and at the base drawn out into spurs like that of the sepal in which they are both inclosed; the outer two are roundish and plaited at the edges. The filaments are numerous, awl-shaped, and crowned with oblong yellow anthers; the germens are three, superior, close together, tapering, downy, and furnished with short filiform styles, terminated by simple stigmas. The three capsules are ovate-oblong, tapering, pointed, with one valve opening internally, and contain many rough, brown, triangular seeds. The beautiful figure which accompanies this description, we have taken from Sibthorp's celebrated "Flora Græca." Fig. (*a*) represents the nectary; (*b*) the stamens; (*c*) the capsules.

The Delphinum Staphisagria is supposed to be the σταφις αγρια of Dioscorides; and from the flower being something like a dolphin's head, the generic term is derived from δελφιν, a dolphin. Our climate is too cold for this plant to be commonly cultivated in the open air.

Qualities and Chemical Properties.—The seeds of this species of Delphinium are rough and blackish without, and of a light yellowish colour within. Their odour is slightly fœtid; to the taste they are intensely bitter, acrid and nauseous, and when masticated powerfully excite the salivary secretion, and inflame the fauces. MM. Lassaigne and Feneulle have discovered in the stavesacre a vegetable alkali which they have named *delphinia*, from a supposition that the acrid qualities of the whole family depended upon this principle: an opinion, however, which has not been confirmed by the analysis of other plants belonging to it.

It is thus obtained: The seeds, deprived of their husks and ground, are to be boiled in a small quantity of distilled water, and then pressed in a cloth; the decoction is to be filtered, and boiled for a few minutes

with pure magnesia; it must then be re-filtered, and the residuum left on the filter; when well washed, it is to be boiled with highly rectified alcohol, which dissolves out the alkali, and, by evaporation, it is obtained as a white pulverulent substance, presenting a few crystalline points.

It may be obtained also by acting with dilute sulphuric acid on the seeds, unshelled but well bruised; the solution is to be precipitated by subcarbonate of potash, and the precipitate acted on by alcohol: but, obtained in this way, it is very impure.

Delphine, when pure, is crystalline whilst wet, but, on drying, rapidly becomes opaque by exposure to air. Its taste is bitter and acrid. When heated it melts; and, on cooling, becomes hard and brittle like resin. If heated more highly it blackens, and is decomposed. Water dissolves a very small portion of it. Alcohol and ether dissolve it very readily. The alcoholic solution renders syrup of violets green, and restores the blue tint of litmus, reddened by an acid. It forms neutral salts with the acids, which are very soluble; the alkalies precipitate the delphine in a white gelatinous state, like alumine.

Sulphate of Delphine evaporates in the air, does not crystallize, but becomes a transparent mass like gum. It dissolves in alcohol and water, and has a bitter acrid taste. In the voltaic current it is decomposed, giving up its alkali at the negative pole.

Nitrate of Delphine, when evaporated to dryness, is a yellow crystalline mass. If treated with excess of nitric acid, it becomes converted into a yellow matter, little soluble in water, but soluble in boiling alcohol. This solution is bitter, is not precipitated by potash, ammonia, or lime-water, and appears to contain no nitric acid, though itself is not alkaline. It is not destroyed by further quantities of acid, nor does it form oxalic acid. Strychnine and morphia take a red colour from nitric acid, but delphine never.

The *acetate of Delphine* does not crystallize, but forms a transparent hard mass, bitter and acrid, and readily decomposed by cold sulphuric acid. The oxalate forms small white plates, resembling in taste the preceding salts.

Delphine calcined with oxide of copper gives no other gass than carbonic acid. It exists in the seeds of the stavesacre, in combination with malic acid, and in company with the following principles:—1. A brown bitter principle, precipitable by acetate of lead. 2. Volatile oil. 3. Fixed oil. 4. Albumen. 5. Animalized matter. 6. Mucus. 7. Saccharine mucus. 8. Yellow bitter principle, not precipitable by the acetate of lead. 9. Mineral salts.—*Annales de Chim.* xii. p. 358.

Poisonous Effects.—Hillefield, as recorded in Orfila, gave some infusion of stavesacre to dogs, and the animals died, after having had vomitings, involuntary dejections, general trembling, accompanied by great debility. Orfila also gave the powdered seeds to dogs, which are stated to have died from their effects; but it appears to us that the operation of tying the œsophagus, would, of itself, be liable to produce all the symptoms that were

observed. From its effects when applied to wounds that were made in the thighs of dogs, Orfila infers that stavesacre is not absorbed, and that it produces local irritation, and sympathetic lesion of the nervous system.

Medical Properties and Uses.—Stavesacre seeds produce vomiting, drastic purgation, and inflammation, and are never administered internally. Formerly they were used as a masticatory for tooth-ache; but they are too acrid to be recommended even for this purpose. Externally applied they are said to be efficacious in scabies, and fungous ulcerations; but their chief, and most valuable virtue is that of destroying *pediculi* in the head, when mixed and used with hair-powder.

Delphine has not been employed as a medicine; nor are its effects on the animal economy known.

DAUCUS CAROTA.

Wild Carrot.

Class V. PENTANDRIA.—*Order* II. DIGYNIA.

Nat. Ord. UMBELLATÆ, *Lin.* UMBELLIFERÆ, *Juss.* UMBELLINÆ, UMBELLACEÆ, *Burn.*

GEN. CHAR. *Fruit* elliptic-oblong, compressed transversely. *Achenia* with 4 secondary ridges, with single rows of flat prickles, and 5 less prominent primary cost 5-toothed. *Petals* inversely heart-shaped, unequal. *Flowers* often separated.

SPEC. CHAR. *Stem* bristly. *Leaves* tripinnate; *leaflets* pinnatifid, with linear-lanceolate acute segments. *Involucre* nearly as long as the rays of the umbel. Bristles of the *fruit* slender. *Umbels* with a solitary central abortive coloured flower.

Syn.—Daucus vulgaris, *Raii. Syn.* 218; *Clus. Hist. v.* 2. 198.
Daucus, *n.* 746, *Hall. Hist. v.* 1. 326.
Pastinaca sylvestris tenuifolia, *Ger. Em.* 1028. 1.; *Park.* 902.
Staphylinus, *Rivin. Pentap. Irr. t.* 28.
Caucalis Carota, *Hud. Fl. Ang.* 114; *Stoke's Bot. Mat. Med. v.* 2. 64.
Pastinaca erratica, *Fuch's Hist.* 684. *f.*
Daucus Carota, *Lin. Sp. Pl.* 348; *Willd. v.* 1. 1389; *Fl. Brit.* 300; *Eng. Bot. v.* 17. *t.* 1174; *Woodv. t.* 161; *Mart. Rust. t.* 82; *Hook. Scot.* 88.
PROVINCIALLY.—*Wild Carrot. Bird's Nest. Bee's Nest.*
FOREIGN.—*Carotte*, Fr.; *Carota*, Ital.; *Zanahoria*, Span.; *Karotte, Mohre*, Ger.; *Peen*, Dutch; *Gajer*, Hind.; *Morkow*, Russ.; *Marchew*, Pol.

IN its wild state, the Carrot is a common weed in this country, growing by road sides, especially in a gravelly or chalky soil; and is known by the name of *Bird's-nest*, from the appearance of

the umbels as they approach maturity. It is a biennial plant, flowering in June and July, and ripening its seeds in September.

The root of the Wild Carrot is slender, dry, somewhat woody, of a yellowish colour, and aromatic. The root of the Garden Carrot, which is reckoned only a variety, is succulent, commonly of a yellow or an orange colour, and is universally known as an article of domestic economy. The stem of the wild sort is about two feet high, erect, furrowed, branched, and hairy. The leaves are alternate, on broad footstalks, bipinnate, of a dark green colour, and hairy, especially beneath. The umbels, which terminate the long, leafless branches, are solitary, large, and, as they approach maturity, the external rays become incurved, which renders the inner surface of the umbel concave like a bird's-nest. Both umbels are many-rayed, and consist of flowers that are small, and generally white, except the abortive ones in the centre of the umbel, where they have a purple or reddish hue. The general involucre is composed of many-winged, or pinnatifid leaves, shorter than the umbel; the partial ones undivided, or sometimes 3-cleft. The petals are unequal, radiate, and obcordate. The achenia are in pairs, ovate, and rough, with rigid bristles.—Fig. (*a*) a floret somewhat magnified, to show the stamens, and a single ray of the umbel, with the involucre; (*b*) an achenium.

The Carrot is supposed to be the σταφυινος ἀγριος of Dioscorides, and Pliny, in speaking of it, book xxv. c. 9, says, that the finest kinds were, in his days, those of Candia and Achaia. Celsus refers also to the seeds of another species of Carrot, as an ingredient in the celebrated Mithridate, that secured the body against the effects of poison.

It is generally allowed that the cultivated Carrot is a variety of the wild; but although Miller endeavoured to improve the latter kind, by growing it in different soils, he was never able to effect his purpose: it is therefore probable that we are indebted for our delicious vegetable to an accidental growth from seed, or to a foreign supply; Carrots having been used in the reign of Elizabeth, at which time the utility of gardens was just beginning to be felt, and their stock supplied from abroad. They are cultivated

in the Mahratta and Mysore countries, where they are very fine, and much eaten by the inhabitants.

Culture.—"Several varieties," says Mr. Patrick Neill, "are cultivated, particularly the orange carrot, with a large long root of an orange-yellow colour; the early horn and the late horn carrot, of both which the roots are short and comparatively small; and the red or field carrot, which acquires a large size.

"Carrots are sown at two or three different seasons. The first sowing is made as early perhaps as new year's day, or at any rate before the first of February, on a warm border or in front of a hothouse. Some employ a gentle hotbed for this first crop; while others only hoop over the border, and cover it with mats during frost. The main crop of carrots is put in in March or April; and in June or July a small bed is sown to afford young carrots in the autumn months. In some places a sowing is made a month later, to remain over winter, and afford young carrots in the following spring. These, however, often prove stringy, but they are useful in flavouring soups. In light early soils, it is better that the principal crop should not be sown sooner than the end of April or beginning of May; for in this way the attacks of many larvæ are avoided. For the early crops the horn carrot is best; for the principal crops, the orange variety is preferred, but the red is also much cultivated.

"The fruits having many forked hairs on their borders, by which they adhere together, are rubbed between the hands with some dry sand, so as to separate them. On account of their lightness, a calm day must be chosen for sowing; and the seeds should be trodden in before raking. They are sown either broad-cast, or in drills a foot apart. When the plants come up, several successive hoeings are given; at first with a three-inch, and latterly with a six-inch hoe. The plants are thinned out, either by drawing young carrots for use, or by hoeing, till they stand eight or ten inches from each other, if sown by broad-cast, or six or seven inches in line. The hoeing is either performed only in showery weather, or a watering is generally given after the operation, in order to settle the earth about the roots of the plants left.

"Carrots thrive best in light ground, with a mixture of sand. It should be delved very deep, or even trenched, and at the same time well broken with the spade. If the soil be naturally shallow, the late horn carrot is to be preferred to the orange or red. When manure is added to carrot ground, it should be buried deep, so that the roots may not reach it, else they are apt to become forked and diseased. In general it is best to make carrots the second crop after manuring. From the Scottish Horticultural Memoirs, however, (vol. i. p. 129,) we learn, that pigeons' dung, one of the hottest manures, far from injuring carrots, promotes their health, by preventing the attacks of various larvæ.

"Carrots are taken up at the approach of winter, cleaned and stored among sand. They may be built very firm by laying them heads and tails alternately, and packing with sand. In this way, if frost be excluded from the storehouse, they keep perfectly well till March or April of the following year. Some persons insist that the tops should be entirely cut off at the time of storing, so as effectually to prevent their growing; while others wish to preserve the capability of vegetation, though certainly not to encourage the tendency to grow.

"From old Parkinson we learn, that carrot leaves were in his day thought so ornamental that ladies wore them in place of feathers. It must be confessed that the leaves are beautiful. If during winter a large root be cut over about three or four inches from the top, and be placed in a shallow vessel with water, over the chimney-piece, young and delicate leaves unfold themselves all around, producing a very pretty appearance, enhanced no doubt by the general deadness of that season of the year."

Qualities and Chemical Properties.—The seeds of the wild carrot are aromatic, both in taste and odour. Water digested on them becomes impregnated with the latter quality, but it extracts little of their taste. They yield a yellowish essential oil, and give out all their virtues to spirit. M. Braconot has recently discovered a new acid, named *pectic* acid, which is universally diffused in all vegetables. The following is the method of preparing pectic acid from *carrots*:—The roots being well washed, are reduced to a pulp by means of a grater.

The juice is pressed out, and the grounds repeatedly washed with filtered rain-water, till the water passes out colourless. With these grounds, and a certain quantity of water, a semi-liquid pap is made, into which is stirred a solution of potash or soda of commerce, rendered caustic, in quantity sufficient to maintain in the liquor, till the end of the operation, a slight excess of alkali, perceptible to the taste. The mixture is immediately exposed to heat, and made to boil, till, on taking out with a tube a portion of the thick resulting liquor, it coagulates entirely into a jelly with an acid. The boiling liquor is then strained through linen. The mass is washed with rain-water, containing no sulphate of lime, and the liquors, which are thick and mucilaginous, are added together, and will form into a jelly, if allowed to cool. The solution of this pectate is decomposed with a little muriate of lime, diluted with a great deal of water. By this means, we obtain an extremely abundant transparent jelly of insoluble pectate of lime, which it is easy to wash well upon a linen cloth. This combination is boiled for some minutes with water, acidulated by a little muriatic acid, which dissolves the lime with the starch. The whole is afterwards thrown upon a linen cloth, and the pectic acid is obtained, and may be washed with the greatest facility with pure water.

The proportions of the ingredients are 50 parts of carrots, 300 parts of water, and one part of potass. Pectic acid in jelly liquifies with extreme facility on the affusion of a few drops of ammonia. The solution, evaporated to dryness, gives a residue, a sub-pectate of ammonia, which swells up extremely in distilled water, dissolves in it, and thickens a great quantity of that liquid.

It is remarkable how small a quantity of this salt can communicate to great quantities of sugared water the property of gelatinizing. M. Braconot dissolved, in a quantity of warm water, one part of this salt, produced from the root of the turnip. He dissolved some sugar in the liquor, and then added an infinitely small quantity of the acid; a moment after, the whole had formed into a mass of trembling jelly, of the weight of three hundred parts. The inventor has prepared, by these means,

aromatized jellies, perfectly transparent and colourless, very agreeable to the taste and to the eye. This acid is also obtained from fruits, and may be used in the preparation of jellies. When it is wished, for example, to make a lemon jelly, one part of the acid in jelly, well drained, is mixed with three parts of distilled water; and to these, a small quantity of a dilute solution of pure potash and soda is added, till the acid is dissolved and saturated. This solution is exposed to heat, and three parts of sugar are dissolved in it, a small portion of sugar being previously rubbed on the rind of a lemon. A small quantity of very diluted muriatic or sulphuric acid is added to the liquor to decompose the pectate; the mixture being agitated, acquires consistency, and forms into a jelly a short time afterward.

One of the most valuable properties that the author has discovered in the soluble pectates is, that they may be considered as the most certain antidotes in cases of poisoning by the metallic salts, with the exception of corrosive sublimate, nitrate of silver, and emetic tartar.

MEDICAL PROPERTIES AND USES.—The seeds of Carrot are carminative and somewhat diuretic; and by Schroder, and others, have been recommended for obstructed menses, flatulent cholic, hiccough, dysentery, chronic coughs, gravel, &c. Cullen found them of no efficacy in the latter disease, and they appear to be of little use, excepting as correctors of flatulency. Dr. Ainslie, in his elaborate work, informs us that the Arabians, place the root of the Carrot amongst their Mobehyet, Aphrodisiaca, a proof that they never could have supposed them to be indigestible; which they certainly are not, if they be young, and *well* boiled. Bergius informs us that the expressed and inspissated juice is sweet, approaching to the nature of honey, but not crystallizable: and Marcgraf recommends recent roots to be cut, well washed, and beaten into a pulp; the juice of which is to be expressed through a sieve, and inspissated to the consistence of honey, when it may be used at table instead of sugar, and will be found a useful remedy for infantile and consumptive coughs, and for worms. The root, beaten into a pulp, forms an excellent antiseptic poultice for cancerous and ill-conditioned sores, especially when combined with hemlock. The dose of the bruised seed is from ℈j. to ʒj. or more.

Punica Granatum.

PUNICA GRANATUM.

Common Pomegranate Tree.

Class XII. ICOSANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. POMACEÆ, *Lin.* MYRTI, *Juss.*
MYRTACEÆ, *De Cand.* GRANATEÆ, *D. Don.*

GEN. CHAR. *Calyx* 5-cleft, superior. *Petals* 5-7. *Fruit a Balaust*, many-celled and many seeded.

SPEC. CHAR. *Leaves* lanceolate. *Stem* arborescent.

Syn.—Malus Granata sive Punica, *Ger. Em.* 1450.
Malus Punica sylvestris et sativa, *Bauh. Pin.* 438; *Raii. Hist.* 1462.
Malus Punica, *Camer. Epit.* 130, 131.
Malus Punica sylvestris, sive Balaustrum, *Park. Theatr.* 1511.
Punica spinosa, *n.* 1098. *Hall. Hist.*; *Du Hamel Traite des Arbres, t.* 2. 193.
Punica Granatum, *Sp. Pl. Willd.* 2. 981; *Lamarck Illustr.* 415; *Sm. Fl. Græc. Sibth. v.* 1. 476; *Woodv. t.* 58; *Stokes*, 3. 84.

FOREIGN.—*Le Grenadier*, Fr.; *Pomo Granato*, It.; *Granado*, Span.; *Romeira*, Port.; *Granatbaum*, Ger.; *Granatboom*, Dutch.; *Granatnik*, Russ.; *Rummun*, Arab. *Andr.* Hind.

THE Punica *Granatum* is a native of the southern parts of Europe, of Arabia, Japan, Persia, and Barbary, and is much grown in India and Ceylon. Mr. Crawford says, that in the Indian Archipelago it is found only in a cultivated state, and that the finest fruit is brought into Upper India, from Eastern Persia; while Olivier, in his travels in the Ottoman Empire, informs us that those of Ghemlek are the finest in Turkey. It has also been introduced into the West Indies from Europe, and bears fruit of a very superior description. It blossoms luxuriantly in our own country, but, as the flowers are generally monsters, fruit is seldom met with, and never of a proper flavour. By the Romans it was called the Punic Apple, because it is a Carthaginian plant, and a native of most countries from the north of Africa to Rome. The tree was hence well known to

the ancients, and Venus is fabled to have planted the first in Cyprus. It is said by Theophrastus to inhabit the same spots that the myrtle does, but although it is still found in Macedonia, the latter plant is not to be seen with it. According to Dierbach* it was esteemed by Hippocrates; and Pliny refers to it in the following terms: "Interior Africa ad Garamantas usque, et deserta palmarum magnitudine, et suauitate constat, nobilibus maxime circa delubrum Hammonis. Sed circa Carthaginem Punicum malum cognomine sibi vindicat."—lib. xiii. ch. 19, p. 197.

This tree rises to the height of eighteen or twenty feet; it is covered with a brownish bark, and is divided into many slender branches, which are armed with spines. The leaves are opposite, or ternate, about three inches long, sessile, wavy, entire, oblong or lance-shaped, pointed at both ends, and of a bright green colour, destitute of dots, and without marginal veins. The flowers are large, of a rich scarlet colour, solitary, or two or three together; and are produced at the extremities of the young branches, from June to September. The calyx is turbinate, thick, fleshy, of a fine red colour, and divided into five acute segments, which are valvate in æstivation. The corolla is composed of five large roundish wrinkled petals, rather spreading, and of a scarlet colour. The stamens are indefinite and perigynous, the filaments capillary, furnished with oblong yellow anthers, 2-celled, and bursting in front by two chinks. The germen is inferior, roundish, with a simple style, the length of the stamens, and capitate papulose stigma. The fruit is as big as an orange, globular, somewhat compressed, and indehiscent; it contains numerous angular, exalbuminous seeds, each enveloped in a distinct very juicy rose-coloured pulp, and is crowned with the limb of the calyx, and covered with a thick tawny coriaceous rind, which is the calycine tube. The balaust is divided into two chambers by spurious transverse dissepiments. The upper chamber is 5 or 9-celled, the lower 3-celled. The placentæ of the upper division of the fruit reach from the parietes to the centre; those

of the lower proceed irregularly from the bottom of the fruit. The embryo is oblong with a short straight radicle, and foliaceous, spirally convolute colytedons. Fig. (*a*) represents a section of the flower; (*b*) a single stamen, with its anther.

Qualities and Chemical Properties. — The flowers (*Balaustra* of the ancients*) are of a beautiful red colour, nearly inodorous, but somewhat of a styptic taste. The juice, which is contained in the membranous cells, exhales a vinous smell, when fresh; it is of an agreeable subacid flavour, is refreshing, and contains a great deal of mucilage, united to a little tannin. The bark of the fruit has been used for making leather, and, besides mucilage, it contain a volatile oil, and tannin.

Medical Properties and Uses.—The pulp of the fruit may be eaten by patients who are suffering from the thirst of ardent fever; and combined with sugar, or honey, is very refreshing. By some it is said to be diuretic. "The Hindoo doctors prescribe it, combined with saffron, when the habit is preternaturally heated. The bark of the fruit is a powerful astringent, and as it readily gives out its properties to water, it has been strongly recommended by Dr. Cullen as a medicine of which we may frequently make use for relaxation of the gums and throat, for chronic diarrhœa, blenorrhagia, prolapsus of the rectum or uterus, &c. It is also prescribed with considerable benefit in those profuse perspirations which accompany the last stages of phthisis pulmonalis, and in the colliquative diarrhœa, which is so distressing a symptom towards the close of the disease. The flowers possess the same virtues, but in a milder degree.

The Mahometan physicians consider the bark of the root to be a specific in cases of tape-worm;† and it is probable that they borrowed their knowledge from Avicenna, who is said to be their favourite author. They boil two ounces of the fresh bark, in a

* Flos balaustrum vocatum, et medicinis idoneus, et tingendis vestibus, quarum color inde nomen accepit.---*Pliny, l. c.*

† Vide Ainslie's Materia Indica, vol. i. p. 323

pint and a half of water, till half only of that quantity remains; of this, when cold, a wine-glassful is prescribed every half-hour, till the whole be taken. It occasionally produces a little nausea, says Dr. Ainslie, but seldom fails to destroy the worm, which is soon passed. Celsus also refers to the same practice. And we should suppose that M. Gomez, a Portuguese physician, who has written a treatise on the subject, is indebted to one of these sources for the suggestion. This gentleman has detailed sixteen cases of its successful employment, and since M. Merat has translated his work, and published it in the sixteenth volume of the *Journal Complémentaire*, its efficacy has been confirmed by numerous experiments. Amongst others, M. Bourgeoise has recorded many interesting facts upon the subject, in the Bibliothèque Medicale, (Dec. 1824,) and calculates that he has relieved thirty-four cases.

"Vegetable broth and spare diet are prescribed until the decoction be given. The evening before the medicine is taken, it is usual for the patient to take an *ounce* and a half, or two *ounces* of castor oil, with an equal quantity of syrup of lemons.

Decoction of the Bark of Pomegranate Root.

Take of fresh, but dry bark of the root of the pomegranate (bruised) . .	2 ounces.
Common water . . .	2 pints.

"Macerate without heat twenty-four hours, then boil gently until it be reduced to one pint, and strain.

"This quantity of decoction is to be taken in three doses, one every half-hour, or every three-quarters of an hour.

"Usually in an hour, seldom so long as two hours after the third dose, the tenia is brought away entire, wound up into a ball, and strongly knotted in many places.

"Sometimes the first and the second doses are rejected from the stomach; notwithstanding which the third dose must be taken. It has been stated that the medicine given in the manner described may produce serious consequences.

"M. Bourgeoise, who gave it always in this manner, has never observed any thing which has induced him to give a less quantity: he has even used it in a stronger dose. If the tenia should not come away in an entire state, the vermifuge decoction should be repeated the following day." (*Majendie's Formulary.*)

Santonica. Absinthium

ARTEMISIA ABSINTHIUM.

Common Wormwood.

Class XIX. SYNGENESIA.—*Order* II. POLYG-SUPERF.
Nat Ord. COMPOSITÆ, γ, *discoideæ*, *Lin.* CORYMBIFERÆ, *Juss. De Cand.*, &c. ASTERINÆ, CORYMBIACEÆ, *Burn.*

GEN. CHAR. *Receptacle* either naked or hairy. *Involucre* imbricated, with roundish converging scales. *Florets* of the ray subulate, entire; fruit inferior, and crowned with a membranaceous pappus.

* * * *Erect, herbaceous.*

SPEC. CHAR. *Leaves* bi- or tri-pinnatifid, clothed with a close silky down; the segments lanceolate. *Capitula* drooping, hemispherical. *Receptacle* hairy.

Syn.—Absinthium latifolium sive ponticum, *Ger. Em.* 1096.
Absinthium vulgare, *Raii. Syn.* 188; *Park.* 98; *Fuchs. Hist.* 1. *f.*; *Ic.* 2. *f.*
Absinthium, *Matth Valga. v.* 2. 47. *f.*; *Camer. Epit.* 452. *f.*
Absinthium, *n.* 124; *Hall. Hist. v.* 1. 53.
Artemisia Absinthium, *Lin. Sp. Pl.* 1188; *Willd. v.* 3. 1844; *H. Brit.* 864; *Eng. Bot. v.* 18; *t.* 1230; *Hook. Scot.* 239; *Woodv. t.* 120.

FOREIGN.—*Absinthe commun*, Fr.; *Assenzio*, It.; *Artemisio ajengo*, Sp.; *Wermuth*, Ger.; *Alsem*, Dutch; *Polin*, Russ.; *Malurt*, Dan.

COMMON Wormwood, which, Dr. Thomson justly observes,* is the only species of Artemisia that deserves to be retained in the list of materia medica, is an indigenous perennial plant, growing naturally in waste places, and by road sides; flowering in August. In the neighbourhood of London, it is extensively cultivated for medical use, but wild specimens are more powerful than garden ones. At Mitcham, in Surrey, it is a good deal

* London Dispensatory, 3d edit. p. 152.

grown for the seed, which is sold to the rectifiers of British spirits; and in Scotland, the distillers of great-still whiskey sometimes employ it in place of hops, and for their use, small fields of it are occasionally sown.

The root is woody and branched, with numerous fibres below. The stems rise one or two feet high; are branching, erect, striated, leafy, and panicled at top. Every part of the herb is covered with a close silky down, and has a peculiar strong aromatic odour. The lower leaves are bipinnate, on long footstalks; the upper pinnatifid, or digitated, on shorter footstalks, with broadish, entire, obtuse segments. The corymbs are erect, and the flowers stalked, drooping, hemispherical, of a yellow colour, and accompanied by entire, oblong bracteas. The involucre is imbricated and roundish. The florets of the disc are numerous, perfect, tubular, 5-lobed; those of the radius few, and destitute of stamens. The filaments are five, short, and united by their anthers into a 5-toothed tube. The germen is small, with a large recurved style and cloven stigma. The achenia are small and obovate. The receptacle is convex, and clothed with fine white silky hairs. Fig. (*a*) represents the involucre magnified to show the scales; (*b*) a section of the receptacle with a perfect flower; (*c*) the pistil and germen; (*d*) the corolla spread to show the insertion of the stamens.

Qualities and Chemical Properties.—Common Wormwood has a strong fragrant odour, and an intensely bitter, nauseous taste. These qualities are most remarkable in the fresh leaves, which lose part of their disagreeable smell by drying. The flowers are nearly as bitter as the leaves, but less nauseous; the roots are warm and aromatic, without the bitterness of the other parts of the plant. The leaves, and flowering tops, are the parts directed for medical purposes; and their peculiar virtues may be extracted either by water or by alcohol. Besides the resinous matter, in which the bitter quality more immediately resides, the herb contains extractive, some earthy and saline matters, and an essential oil, which is not in the least bitter. By long boiling the essential oil is dissipated, and the bitter is obtained entire. An infusion of the herb gives to

water an olive tinge, which is slowly changed to black by the salts of iron; and superacetate of lead throws down a yellowish green flocculent precipitate.

Medical Properties and Uses.—Wormwood is one of the most popular stomachics, and possesses the properties of the class of bitters in a considerable degree; but it is inferior in medicinal powers to gentian, chamomile, quassia, and many others. It is regarded as anthelmintic, slightly tonic, and, in an inconsiderable degree, diuretic. It is an ingredient in the *Decoctum pro Fomento* of the older editions of the London Pharmacopæia, usually termed *Fotus communis*, which is made by boiling an ounce of dried chamomile, dried wormwood, dried southernwood, and half an ounce of bay-leaves in six pints of water. The chief use of wormwood is in dyspepsia, and hypochondriacal affections; and it has at different times acquired a high reputation for its efficacy in intermittents, gout, scurvy, jaundice, and dropsy. Like all other bitters, it has been of service in calculous complaints, and is an ingredient in the once celebrated Portland powder for the cure of gout. Haller* extols its powers as a stomachic, and recommends it as a preventive of the fits of gout, for which purpose it is said to have been advantageously employed by the Emperor Charles V. The extract is nearly a simple bitter, and may be administered in doses of gr. x. to ʒj, two or three times a day. The essential oil is recommended by Hoffman as an antispasmodic, and anodyne; and by Boerhaave in tertians; but modern practice supplies more effectual remedies. The vegetable alkali of the shops was formerly procured from this herb, and called salt of wormwood; and some have supposed that saline draughts made with it, sit more easy on the stomach than those in which the common salt of tartar is used.

Dose.—In substance, ʒj. to ʒss.; of the infusion, made by macerating, ʒvi. of the herb in ℥xij. of water, ℥j. to ℥iss.

Off. Prep.—*Extractum Absinthii. D.*

* Haller Hist. Stirp. Indig. Helvet. tom. 1, p. 54.

ARTEMISIA SANTONICA.—*Tartarian Southernwood.*

Pl. 58.

** *Procumbent before flowering.*

SPEC. CHAR. *Stem-leaves* pinnate, linear, multifid, smooth. *Branches* undivided. *Flowers* 1-ranked, reflexed. *Capitula* with five florets.

Syn.—Sementina, *Ger. Em.* 1100.
Semen Sanctum, *Lob. Ic.* 758.
Absinthium Santonicum Alexandrinum, *Bauh. Pin.* 139; *Raii. Hist.* 368; *Park.* 132.
Absinthium Seraphium Ægyptium et semen Sanctum, *Camer. Epit.* 457.
Artemisia Santonica, *Sp. Pl. Willd.*; *Woodv.* 335. *t.* 123.

FOREIGN.—*Sementine*, Fr.; *Santonico*, It.; *Sartarisches Beyfus.*

THIS species of Artemisia is a native of Tartary, and Persia; and is reported to have been cultivated in England by Miller, in 1768. It flowers from September till November.

The root is perennial, and woody. The stem is two feet high or more; round, panicled, erect, and somewhat hoary. The leaves on the upper part of the stem and branches are small, sessile, linear, entire, and undivided; the lower ones pinnate, much cut, linear, of a pale green colour above, and hoary beneath. The flowers are roundish, pale brown, solitary, and placed in alternate spikes or racemes upon short footstalks, and are all directed the same way. In the fruiting plant the branches are erect, and lose their hoariness. The involucre is composed of numerous narrow imbricated scales. The florets of the disc are hermaphrodite; those of the radius female; and both, in their situation and structure, agree with the preceding species. The receptacle is naked.

QUALITIES.—This species of Artemisia very much resembles common wormwood in its chemical and sensible qualities.

It has a strong disagreeable odour; and when chewed, first warms the tongue, and then leaves a sensation of cold. The seeds, both of this and of the Artemisia *judaica*, are brought from the Levant, and sold under the name of worm-seed.

Medical Properties.—The seeds of this plant, known by the name of *Semina Santonica*, were formerly much used for the expulsion of worms, but have given place to anthelmintics more deserving of notice. They have likewise been supposed to possess emmenagogue powers. Bergius says, "Puellæ cuidam decenni, vermibus conflictanti, semina santonica exhibui, sed per illud tempus, quo iis utebatur, menses fluxerunt, qua re cognita, usum eorundem dissvasi, unde etiam fluxus sponte cessavit." When employed as an anthelmintic, from twenty grains to one dram, to an adult, may be given in syrup or treacle, combined with small doses of the sulphate of iron, two or three times a-day, interposing a cathartic.

ARTEMISIA ABROTANUM.—*Common Southernwood.*

* *Shrubby erect.*

Spec. Char. *Upper leaves* setaceous, pinnatifid; *lower ones* bipinnate; *stem* very branching, shrubby.

Syn.—Abrotanum mas, *Ger. Em.* 1105; *Raii. Hist.* 371; *Dodon. Pempt.* 21.
Abrotanum mas vulgare, *Park. Theatr.* 92.
Abrotanum mas angustifolium majus, *Bauh. Pin.* 136; *Tourn. Inst.* 459; *Duham. Arb.* 20. *t.* 4.
Artemisia Abrotanum, *Sp. Pl. Willd. v.* 3. 1815; *Woodv. v.* 3. *t.* 119.

Foreign.—*Abrotonum*, Lat.; *L'Aurone des Jardins, Citronelle Auronne*, Fr.; *Abrotano*, Ital.; *Limbriguera*, Sp.; *Stabwurze, Eberaute, Gartenwurz*, Ger.

This species of Artemisia is a perennial under-shrub, a native of Syria, China, Siberia, Italy, Carniola, and Montpellier. In

England, it was cultivated by Gerarde in 1596, and probably much earlier. Although it sustains no injury from our ordinary winters, it seldom flowers.

The root is woody and fibrous. The stem rises two or three feet in height; is branching, and covered with an ash-grey bark. The leaves are alternate, doubly and irregularly pinnate, and stand upon long footstalks. The leaflets are linear, very narrow, entire, concave on the upper surface, concave below; tomentose, and of a pale green colour. The flowers, which are in close upright spikes at the extremities of the branches, are small, numerous, and of a pale yellow colour. The seeds are naked and solitary.

Southernwood is called in Greek Αβροτονον, which is variously derived from αβροτον, *inhumanum*, bitterer than wormwood; from αβρωτον, *cibo inutile*, unfit for food; δια το προς οψιν αβρον και απαλον φαινεσθαι, from the delicacy and softness of its appearance; or from αβρος, and τονος, οτι αβρως τεινεται, because it is extended, or grows in a very lax manner.

Qualities.—The herb, which is the part used in medicine, is exceedingly grateful in odour to most persons, and there are few cottage-gardens in which it is not to be found. The taste is pungent, bitter, and somewhat nauseous; it depends on an essential oil, and a small portion of resinous matter, soluble in proof spirits; the tincture thus formed is of a fine green colour, and contains the active properties of the plant in an eminent degree. The infusion is of a pale brown colour, possesses a slight bitter taste, strikes a black colour with the sulphate of iron, and precipitates the acetate of lead. Six pounds of the fresh tops yield about a dram of essential oil, of a bright yellow colour, and an odour resembling that of the plant.

Medical Properties and Uses.—Southernwood agrees in its medical properties with the other species of Artemisia, but is more disagreeable; and as it possesses no advantages over either the common or the sea wormwoods, it is never prescribed in modern practice. A decoction of the herb was formerly employed externally in fomentations; it has also been used under the form of ointment and lotion for some cutaneous eruptions,

and for preventing the hair from falling off. In the days of Gerarde, Southernwood was highly extolled in a variety of diseases, and the following extract from his Herbal will at least afford amusement:—"The tops, flowers, or seed, boiled or stamped raw with water and dranke, helpeth them that cannot take their breath without holding their necks straight up, and is a remedie for the crampe, and for sinewes shrunke and drawne togither; for the sciatica also, and for them that can hardly make water, and it is goode to bring down the termes. It killeth wormes and driveth them out; if it be drunke with wine, it is a remedie against deadly poisons. Also it helpeth against the stinging of scorpions and fielde spiders, but it hurteth the stomake. Stamped and mixed with oile, it taketh away the shiuering cold that cometh by the ague fits, and it heateth the body if it be anointed therewith before the fits do come. It is goode for inflammations of the eies, with the pulpe of a rosted quince, or with crums of bread, and applied pultis-wise. The ashes of burnt southernwood with some kind of oyle that is of thinner parts, as of Palma Christi, Radish oyle, oyle of sweet Marierome, or Organie, cureth the pilling of the haire, and maketh the beard to grow quickly; being strowed about the bed, or a fume made of it vpon hot embers, it driveth away serpents; but if a branch be laid vnder the bed's head, they say that it prouoketh venerie. The seeds of Southernwood made into powder, or boiled in wine and drunke, is good against the difficultie and stopping of vrine; it expelleth, wasteth, consumeth, and digesteth all colde humours, tough slime, and flegme, which do usually stop the spleene, kidneies, and bladder. Southernwood drunke in wine, is good against all venome and poison. The leaves of Southernwood boiled in water vntil they be soft, and stamped with barley and barrowes grease vnto the forme of a plaister, dissolueth and wasteth all colde humours and swellings, being applied or laide thereto."

Dose.—In substance, the dose may be from ℈j to ʒj.

ARTEMISIA MARITIMA.—*Sea Wormwood.*

* * *Procumbent before flowering.*

SPEC. CHAR. *Leaves* downy, pinnate; uppermost undivided. *Flowers* drooping, oblong, sessile, *Receptacle* naked.

Syn —Absinthium marinum album, *Raii. Syn. ed.* 3. 188; *Ger. Em.* 1099. *f.*
Absinthium maritimum, *Dill. in Raii. Syn.* 189.
Artemisia maritima, *Lin. Sp. Pl.* 1186; *Willd. v.* 3. 1833; *Woodv.* t. 122.
ENGLISH.—*Drooping Sea Wormwood; French Sea Wormwood; Sea Mugwort; English Sea Wormwood*; *Roman Wormwood*; Herb-sellers.

THIS is a native plant, growing on the sea-shore, or about the mouths of large rivers, and flowering in August and September. We observed it growing plentifully by the side of the Thames, near Greenhithe, Kent.

The root is perennial, and rather woody. The stems a foot high, or more; solid, woody, erect, or decumbent; alternately branched, leafy, and covered with a fine white cottony down. The whole herb is hoary: the lower leaves are pinnate, with 3-cleft segments; the upper ones linear or irregularly cleft. The flowers are in unilateral leafy racemes, nearly sessile, ovate-oblong, drooping, and of a yellowish brown colour. The outer scales of the involucre are woolly; the inner ones nearly naked, with a broad membranaceous margin. The receptacle is small and naked. The florets are very few; those of the ray sometimes wanting.

QUALITIES.—It has a more agreeable aromatic odour, and less bitter taste than common wormwood; its specific virtue being supposed to depend on a portion of resinous matter, and an essential oil.

MEDICAL PROPERTIES.—The Artemisia *maritima*, as well as the preceding species, has been sometimes prescribed in worm-cases, dyspepsia, and jaundice. Its medical properties are those of a slight tonic, inferior in efficacy to common wormwood; and it is not often employed except in discutient and antiseptic fomentations, for inflammations, tumors, and foul ulcers; where its topical application has been thought beneficial. In substance, the dose may be from ℈j. to ʒj. The infusion is made by macerating for four hours six drachms of the leaves in ten ounces of boiling water. Dose, a cupful twice or three times a-day.

Carum Carui.

LIX

CARUM CARUI.

Common Carraway.

Class V. PENTANDRIA.—*Order* II. DIGYNIA.

Nat. Ord. UMBELLIFERÆ. *Lin. De Cand.* &c.

GEN. CHAR. *Calyx* obsolete. *Petals* inversely heart-shaped, inflexed, emarginate. *Fruit* elliptic-oblong, with five filiform equidistant ribs; interstices striated with single vittæ.

SPEC. CHAR. *Stem* branched. *Partial involucres* none; general, scarcely any.

Syn.—Carum seu Careum, *Raii Syn.* 213; *Ger. Em.* 1034.
Caros, *Fuchs. Hist.* 396. *f.*; *Bauh. Hort. S. p.* 2. 69. *f.*
Carum, *n.* 789. *Hall. Hist. v.* 1. 351.
Carum, *Dod. Pempt.* 299. *f.*; *Matth. Valgr. v.* 2. 114. *f.*; *Camer. Epit.* 516. *f.*
Carum Carui, *Lin. Sp. Pl.* 378; *Willd. v.* 1. 1470; *Fl. Brit.* 330; *Eng. Bot. v.* 21, *t.* 1503; *Hook. Scot.* 95; *Woodv. p.* 125. *t.* 45.

FOREIGN.—*Carvi*, Fr.; *Carvi*, It.; *Alcaravea*, Sp.; *Kümmelsamen*, Ger.; *Karwey*, Dutch; *Alcaravia*, Port.; *Timon*, Russ.; *Karny*, Dol.; *Kornmen*, Dan.

CARRAWAY is an umbelliferous biennial plant, a native of the north of Europe, which has become naturalized, in some parts of Britain, where it has long been cultivated for confectioners, distillers, and bakers, as well as for medicinal purposes. The flowers are produced in June, and the seeds ripen in August or September.

From a spindle-shaped root proceeds an erect, branched, leafy, furrowed, smooth stem, which rises to the height of about two feet. The lower leaves are of a light green colour, eight or ten inches long, stalked, smooth, bipinnate, with numerous finely cut leaflets, the segments of which are narrow, linear, and pointed; those on the stem are smaller, and stand opposite, one

of them on a dilated membranous-edged footstalk, the other sessile. The flowers are numerous, white, or of a pale flesh colour, form an umbel, which is terminal, erect, and composed of many rays. The general umbel is large, usually of ten rays, and furnished with a 1—3-leaved general involucre, which is sometimes deficient; the partial is entirely wanting. The calyx is very minute, or altogether deficient. The petals are five, nearly equal, small, inflexed; the filaments, spreading about as long as the petals, and bearing small, roundish 2-lobed anthers; the germen is inferior, ovate, supporting styles, which are very short in the flower, but afterwards become elongated, and terminate in bluntish stigmas. The achenia are two, elliptic-ovate, bent, of a greyish-brown colour, and marked with three dorsal, and two marginal ribs, the interstices being marked with single vittæ. Fig. (*a*) represents a perfect flower; (*b*) a stamen; (*c*) the germen and styles, magnified.

Culture.—The carraway, or caroy, καρος of Dioscorides, is much cultivated in Essex, especially at Mersea Island. Mr. Neill says the seed should be sown in autumn, soon after it is ripe, on a moist rich soil; the seedlings quickly rise, and the plant being biennial, a season, by this plan, is gained. The seed is generally sown in rows; and in the spring the plants are thinned out, to four or six inches apart. At the end of summer, when the seeds appear to be nearly ripe, the plants are pulled up, and set upright to dry; the seed being then easily beaten out.

Qualities and Medical Properties.—Carraway seeds are warm and aromatic, and give out their virtues, which depend on an essential oil, partially to water, but entirely to alcohol. In former times, the tapering fusiform roots were eaten like parsnips, to which Parkinson gives them the preference. In the Spring, the leaves are sometimes put into soup. The seeds are used for cakes, and, incrusted with sugar, are known by the name of *comfits*. They are likewise distilled with spirituous liquors. The oil of carraways is stimulant and carminative, and is often used to cover the taste of other medicines, and to prevent them from griping.

Convolvulus Scammonia.

CONVOLVULUS SCAMMONIA.

Syrian Bindweed, or Scammony.

For the Class, Order, and Generic Character, see Convolvulus *sepium*.

SPEC. CHAR. *Leaves* sagittate, the posterior margins truncate with a tooth. *Foot-stalks* cylindrical, nearly double the length of the leaves, mostly 3-flowered.

Scammonium Syriacum, *Ger. Em.* 866; *Lob. Ic.* 1. 620; *Raii. Hist.* 722; *Park*, 163; *Bauh. Hist.* 2. 162.

Convolvulus Syriacus, sive Scammonia, *Moris. Hist.* 2. 12. *t.* 3. 5; *Bauh. Pin.* 294.

Σκαμμωνια, *Diosc.*

Convolvulus Scammonia, *Sp. Pl. Willd.* 1. 844; *Sm. Fl. Græc. Sibth.*; *Woodv. Med. Bot.* 2*d. edit.* 243. *t.* 86; *Stokes*, 1. 322.

FOREIGN.—*Scammonèe*, Fr.; *Scammonea*, It.; *Escamonea*, Sp.; *Scammonium Von Aleppo*, Ger.; *Sukmunga*, Hind. and Arab.

THIS species, which amongst all the generic mutations that have been made still remains a Convolvulus, much resembles our great Bindweed (C. *sepium*), it is a native of Turkey, Syria, Greece, Persia, and Cochinchina. According to Dr. Russell, it grows in abundance on the mountains between Aleppo and Latachea, from whence the greater part of the Scammony of commerce is obtained. It is a perennial plant, and is reported to have been cultivated in England by Gerarde in 1597.

The root is fleshy, tapering, from three to four feet in length, and from three to four inches in diameter, covered with a light grey bark, branched at the lower part, and abounding with a milky juice. It sends up several slender, cylindrical, somewhat

villous stems, which entwine themselves round the plants in their neighbourhood, or spread themselves on the ground, and frequently extend to the length of fifteen or twenty feet. The leaves are arrow-shaped, alternate, smooth, pointed, of a bright green colour, with a tooth on the inner side of each, and supported on long pedicels. The flowers grow upon slender erect stems, of about six inches long, divided near the top into two small pedicles, an inch or two in length, each supporting a pale yellow bell-shaped flower, with its margin turned outwards and undivided. These flowers begin to be sent off from the stalk within about two feet from the root, and so continue through the whole length of the plant. The segments of the calyx are emarginate; bracteas awl-shaped, spreading remote from the flower. The form and structure of the other parts of the flower do not differ materially from the other species of convolvulus already described. The capsule is two-celled, containing two small pyramidal seeds. Fig. (*a*) represents the corolla removed to show the stamens; (*b*) the germen and style.

Medical Properties and Uses.—Scammony was employed as a drastic purgative by Hippocrates and other Greek physicians; and although Ætius, Mesue, and many of the Arabians, aver that it ought never to be used, Rhazes appears to have formed an opinion in accordance with what modern experience teaches: he allows it to be taken cautiously, and adds, "bilem rubeam vehementer expellit."* Those of the ancients who did employ it, prescribed it for gout, rheumatism, and many other chronic diseases; and they were also in the habit of ordering an acetous decoction of it to be mixed with meal, and applied in the form of a poultice to painful affections of the joints. Celsus expressly recommends it for worms,† and practitioners of the present day frequently adopt his advice. Van Swieten ordered it to be given some hours before the accession of a fit of the ague; and it was supposed to change,

* Oper. de Re Med. lib. viii. p. 206.
† Lib. iv. chap. 17.

or modify the particular disposition that led to the paroxysm, by the action that it excited; but it is a violent and unjustifiable method, and now very properly forgotten. Scammony we consider to be a valuable drastic purgative in cases of dropsy, torpor of the intestinal canal, hypochondriasis and mania; and when aloes produce unpleasant effects on the hæmorrhoidal vessels, it may generally be substituted with advantage; but it sometimes excites the intestinal canal so violently, as to produce numerous evacuations, that are occasionally bloody; painful tenesmus, colic, and inflammation: the ancients, aware of this, attempted to modify its action by sulphur; while the moderns employ sugar, gum, or almonds; or what is preferable, combine it with other purgatives.

Scammony is an important article in the materia medica of *empirics;* and a combination of scammony, cream of tartar, and antimony, being recommended by Robert Dudley, Earl of Warwick, to Marcus Cornachinus, of Pisa, the latter wrote a work in favour of it, which passed through several editions; by which means its virtues became so notorious, that in France it is called *Poudre Cornachine, Poudre des Tribus, or Poudre des Trois Diables.*

Dose.—Scammony may be given in doses of from five to ten grains; but in smaller quantities when combined with other cathartics.

Off. Prep.—Confect Scammoneæ, *L. D.*
Pulv. Scammoneæ Comp. *L. E.*
Pulv. Sennæ Comp. *L.*
Extractum Colocynthidis Comp. *L. D.*

Scammony (says Dr. Russell*) grows naturally on all that chain of mountains which extends from Antioch to Mount Lebanon, and on that part of Mount Taurus which is near to Maraash. I have also seen it in the plains between Latachia and Tripoly Syria, wherever there was any cover for it from the intense heat. From these places it is chiefly collected and brought to Aleppo; but as I have also seen some plants of it on the Mountain Amanus, I imagine it might probably be found on most of the hills in Syria that produce any

* Med. Observ. and Inquiries, vol. i. p. 18.

verdure; but the plundering disposition of the inhabitants renders it very unsafe to venture amongst them in search of it. The time of collecting the scammony is in the beginning of June. The people employed in it are only a few peasants, who travel over the country on purpose at that season. For as the plant grows entirely without culture, the scammony is the property of any person who will be at the pains to collect it. In many villages, about which it grows in the greatest plenty, the peasants either do not know it, or are unwilling to take the trouble of gathering it. The method of collecting it is this:—having cleared away the earth from the upper part of the root, they cut off the top in an oblique direction, about two inches below where the stalks spring from it. Under the most depending part of the slope they fix a shell, or some other convenient receptacle, into which the milky juice generally flows. It is left then about twelve hours, which time is sufficient for the drawing off the whole juice; this however is in small quantity, each root affording but a very few drams. This milky juice from the several roots is put together, often into the leg of an old boot, for want of some more proper vessel, when in a little time it grows hard, and is the genuine scammony. It is the root only that produces this concrete; for the stalks and leaves near the root, even when pressed, afford no signs of a milky juice; though, at the superior extremity of the plant, the leaves and stalks, when strongly pressed, do emit a very thin milky liquor; yet both the quantity is inconsiderable, and, according to the best observation I could make, the quality of it is different; for neither stalks, leaves, flowers, nor seeds, seem to have any purgative quality. Of this entirely pure scammony, but very little is brought to market, the greatest part of what is to be met with, being adulterated, if not by those who gather it, by those who buy it of them abroad; for the chief part of what is brought hither, passes through the hands of a few people, chiefly Jews, who make it their business to go to the villages of any note, near which the scammony is collected; as Antioch, Shogre, Elib, Maraash, &c. and then buying it while it is yet soft, they have an opportunity of mixing it with such other things as suit their purpose best; as wheat-flower, ashes, or fine sand, all of which I have found it mixed with; but there seems to be some other ingredient (possibly the expressed juice) which makes it so very hard and indissolvable, that I have not been able to discover it to my satisfaction.....

Qualities and Chemical Properties.—"Pure scammony is light, shining when broke, and crumbles with the least force when rubbed between the fingers. If a wetted finger but touches it, it turns immediately milky; and if broke, and put into a glass of water, it soon dissolves into a milky liquor of a greenish cast;* which, though it lets fall a small sediment after a little

* This of course applies only to the recent article.

time, yet the liquor still retains its milky colour. The colour of scammony seems to be a mark of little consequence, for it is seen of all degrees, from almost jet black to a yellowish white, and all equally good in every respect upon trial; but though it differs so much in colour when in large pieces, yet all good scammony, when powdered, is nearly of the same colour, a brownish white. Those who gather it assert, that the difference of colour proceeds from the different methods of drying it; alleging, that what is dried in the sun will differ widely from what is dried in the shade." *(Russell.)* This description applies only to what is known in the markets by the name of Aleppo Scammony; but another sort brought from Smyrna is said to be the produce of the Periploca *Scammonia.**

Smyrna Scammony is in compact ponderous masses of a black colour, harder, and of a stronger smell and taste than the other kind, and full of impurities. The smell of scammony is peculiar and nauseous, its taste is bitter, and acrid; with water it forms a greenish coloured opaque liquid. Alcohol dissolves the greatest part of it. Its specific gravity is 1.235.

Vogel and Bouillon La Grange† have analysed the two varieties, as follows:—

Aleppo.		Smyrna.	
Resin . . .	60	Resin . . .	29
Gum	3	Gum	8
Extractive . .	2	Extractive . .	5
Vegetable *debris*, earth,&c.	35	Vegetable *debris*, &c. .	58
	100		100

Mr. Gate, of Princes Street, Soho, who lived at a large wholesale druggist's in the city, has favoured us with the follow-

* Pharmacop. Francaise, by Ratier, p. 94.
† Ann. de Chim. Lib. xxii. 69.

ing receipt for a spurious kind of Scammony, with which the market is supplied by unprincipled men:—

Take of Gum Scammony, six pounds.
Gum Arabic, six pounds.
Calomel, two ounces.
Aleppo Scammony, one pound.
Ivory Black, *q. s.*

The whole, after being powdered, is formed into a mass by the addition of water.

Linum

usitatissimum *catharticum*

LINUM USITATISSIMUM.

Common Flax.

Class V. PENTANDRIA.—*Order* V. PENTAGYNIA.

Nat. Ord. GRUINALES, *Lin.* CARYOPHYLLEÆ, AFF. *Juss.* LINEÆ, *De Cand.* LINACEÆ, *Burn.*

GEN. CHAR. *Calyx* 5-sepalled. *Corolla* 5-petalled. *Capsule* globose, mucronate, 10-valved, 10-celled. *Seeds* ovate, compressed, one in each cell.

* *Leaves alternate.*

SPEC. CHAR. *Sepals* ovate, acute, 3-nerved. *Petals* crenate. *Leaves* lanceolate. *Stem* sub-solitary.

Syn.—Linum sylvestre sativum plane referens, *Raii Syn.* 362.

Linum sativum, *Ger. Em.* 556; *Park. Theatr.* 1335.

Linum, *n.* 836. *Hall. Hist. v.* 1. 373.

β Linum, *Camer. Epit.* 200. *f.*; *Bauh. Hist. v.* 3. 450. *f.*; *Fuchs. Hist.* 471. *f.*; *Raii. Syn.* 362.

Linum usitatissimum, *Lin. Sp. Pl.* 397; *Willd. v.* 1. 1533; *Fl. Brit.* 342; *Eng. Bot. v.* 19. *t.* 1357; *Curt. Lond. fasc.* 5. *t.* 22; *Woodv. t.* 111; *Hook. Scot.* 97; *Stokes, v.* 2. 186.

PROVINCIALLY.—*Lint*; *Lyne*; *Flax.*

FOREIGN.—*Lin, Grains de Lin*, Fr.; *Lino domestico, Semi de Lino*, It.; *Laxor*, Sp.; *Flachs, Lein, Leinsaamen, Flachsaamen*, Ger.; *Vlasch*, Dutch; *Len, Lan*, Russ.; *Busrue*, Arab.; *Tisi*, Hind.; *Bad*, Hebr.; *Hor*, Dan.

OF the genus Linum, nearly fifty species have been described by botanical writers. Linneus, in the 14th edition of his Systema Vegetabilium, enumerates but twenty-two; besides which, four, not mentioned by him, occur in the Hortus Kewensis, and one in the Prodromus Floræ Græcæ. To this list belongs the L. *Radiola*, which is the Radiola *millegrana* of Smith. Don, in his edition of Miller's Dictionary, describes forty-nine species, several of which include well-marked varieties. The genus is divided into two sections, the first having opposite, the second, alternate leaves. To the first section belongs the Linum *usitatissimum*, the subject of this article. It is an an-

nual plant, growing occasionally in corn-fields, and in sandy pastures; flowering in July, and ripening its seeds in September.

Common flax has a small, fibrous root; a round, slender, smooth, leafy, and branched stem, which rises to the height of two feet. The leaves are scattered, small, lanceolate, entire, sessile, 3-nerved, alternate, and, on the upper part of the stem, of a glaucous, or sea-green colour. The flowers are numerous, collected in a corymbose pannicle, erect, and supported on longish footstalks. The calyx is composed of five lanceolate, erect, permanent, 3-ribbed sepals, imbricate in æstivation. The corolla is funnel-shaped, and consists of five-notched, sky-blue, shining, veiny, oblong petals, which are narrow below, and gradually grow broader upwards, the æstivation being contorted. The filaments are five, awl-shaped, erect, the length of the calyx, and inserted into an annular receptacle, with 2-celled sagitate anthers. The germen is superior, ovate, and surmounted by five blue, capillary, spreading, undivided, bluntish stigmas, the length of the stamens. The fruit is a globular capsule, about the size of a pea, with ten cells and ten valves united in pairs, and crowned with a sharp spine. In each cell is lodged a single elliptical, pointed, smooth, and shining seed. Fig. (*a*) represents the calyx; (*b*) the stamens; (*c*) the germen and styles.

The generic name, Linum, (λίνον,) retained from the ancient Greek authors, is supposed to be derived from λινεω, to hold; the fibres of this plant being so remarkable for their tenacity, that its herbage has always been in the highest estimation in the manufacture of cloth.

Flax is mentioned in the ninth chapter of Exodus, verse 31, as growing in Egypt; and it is still found in those parts which are inundated by the Nile. It grows also in many of the counties of England; and as we have no intimation of its first introduction, it has been supposed, by most botanists, to be an indigenous plant. Although its utility has been known from time immemorial, it appears probable that its applicability to the common purposes of society was ascertained long after cotton had been employed; as the vestments of mummies are composed of the latter material, which in its natural state, even from its

very appearance, would be likely to have struck the Egyptians as a structure that might easily be wrought into garments. In the simplicity of former times, when families provided themselves with most of the conveniences and necessities of life, every garden supplied a sufficient quantity of hemp and flax; but although we make clothing from the stalks of the latter, and draw valuable oil from its seeds, which likewise serve as food for our cattle, little of it is now cultivated in England; wheat yielding crops much more profitable. The legislature of this country has paid more attention to framing laws regarding flax husbandry than to any other branch of rural economy; but it need not excite surprise that the laws enacted, even though accompanied with premiums to encourage their observance, have failed to make men act contrary to their own interest; the fact being, that the culture of flax is far less profitable in this well-peopled country to the culture of the cereal grains; for not only can it be imported at a lower price than it can be grown, but it is also one of the most severe and exhausting crops for the land when allowed to ripen its seeds. Between 40 and 50,000 tons of flax and tow are annually imported into this country, the duty upon which is now reduced to one penny per cwt. The imports are chiefly made from Russia, the Netherlands, and Prussia. Some is also brought from France, Egypt, and even from New South Wales. In 1829, upwards of two million bushels of linseed were imported. The maceration or steeping, necessary to separate the flax fibres, renders water so very offensive, that in the reign of Henry the Eighth, and also of James the Sixth of Scotland, acts were passed to prevent this process from being carried on in any river, stream, or pond, where cattle drank, under the penalty of twenty shillings.

Qualities and Chemical Properties.—The cuticle of the seeds of flax, commonly called *linseed*, yields a mucilage to boiling water, which is inodorous, and has but little taste. By *expression*, a bland, inodorous, sweetish oil is obtained from the nucleus of the seed, the specific gravity of which is 939.* It is much more soluble in alcohol than olive-oil; and as it is one of the *drying oils*,† it loses its unctuosity after proper preparation,

* Prof. Thomson's System of Chemistry.

† When fixed oils are exposed to the open air, or to oxygen gas, they undergo different changes according to the oil. All of them, as far as experience has gone,

and is used for varnishes, and printer's ink. It is not congealed excepting by a cold below 0° of Fahrenheit, and boils at 600° of the same scale. Although the pharmacopœia orders this oil to be obtained by simple expression, heat is generally employed, which renders it disagreeable both in taste and smell: it is therefore seldom employed as an internal remedy. Linseed contains about one-fifth of mucilage, and one-sixth of oil. The cake remaining after the expression of the latter, is used for fattening cattle, by the name of oil cake.

Medical Properties and Uses.—Woodville asserts that linseed affords but little nourishment, and that when taken as food it is found to impair the stomach. These circumstances were noticed by Galen. Ray also adverts to them; and Professor Fritze, in his Medical Annals, states, that vegetable mucilage, when used as a principal article of diet, relaxes the organs of digestion, and produces a viscid, slimy mucus, and a morbid acid in the primæ viæ—effects which may be obviated, as Dr. Paris has well shown,* by the addition of bitter extractive.

As we have already stated, the oil is little used as a demulcent; but when it can be obtained good, we can recommend it to be given in doses of a table-spoonful as an excellent corrector of habitual costiveness; and if a drachm of tincture of rhubarb be added to it, it will generally agree with the most fastidious stomachs. The decoction of the seeds contains a portion of oil diffused in the mucilage; it is, therefore, a useful ingredient for injections, when there is abrasion or ulceration of the mucous membrane of the intestines: and the infusion is a valuable drink for persons who are suffering from irritation of the fauces; it is also much employed for diseases of the urinary organs, on a false principle we conceive.† We need scarcely state, that one of our most useful and common poultices is made with linseed-meal and boiling water.

Off. Prep.—Infusum Lini. *L.*
Oleum Lini. *L. E. D.*

have the property of absorbing oxygen; and by uniting with it, they become more and more viscid, and terminate at last in a solid state, being apparently saturated with oxygen. Some retain their transparency after they have become solid; while others become opaque, and assume the appearance of tallow, or wax. Those that remain transparent are called *drying oils*, while those that become opaque are called *fat oils*.

* Pharmacologia. Edit. 5. vol. i. p. 144.

† See our observations on this subject under Althæa officinalis. *Art.* 51.

LINUM CATHARTICUM.

Purging Flax, or Mill-Mountain.

Pl. 61.

* * *Leaves opposite.*

SPEC. CHAR. *Leaves* opposite, obovate-lanceolate. *Stem* pannicled above with dichotomous branches. *Petals* acute.

Syn.—Linum sylvestre catharticum, *Raii. Syn.* 362; *Ger. Em.* 560. *f.*
Linum pratense, flosculis exiguis, *Bauh. Pin.* 214.
Chamælinum Clusii flore albo, sive Linum sylvestre catharticum, *Park.* 1336.
Linum, *n.* 839. *Hall. Hist. v.* 1. 374.
Linum catharticum, *Lin. Sp. Pl.* 401; *Willd. v.* 1. 1541; *Fl. Brit.* 344; *Eng. Bot. v.* 6. *t.* 382; *Curt. Lond. fasc.* 3. *t.* 19; *Hook. Scot.* 97; *Stokes, v.* 2. 188.

PROVINCIALLY.—*Wild Dwarf Flax; Mountain Flax; Mill-mountain; Meadow Flax; Two-leaved Spurrey; Chamælinum,* or *Ground Flax.*

FOREIGN.—*Lin Sauvage, Lin purgatif,* Fr.; *Lino salvatico,* It.; *Purgierend flachs,* Ger.

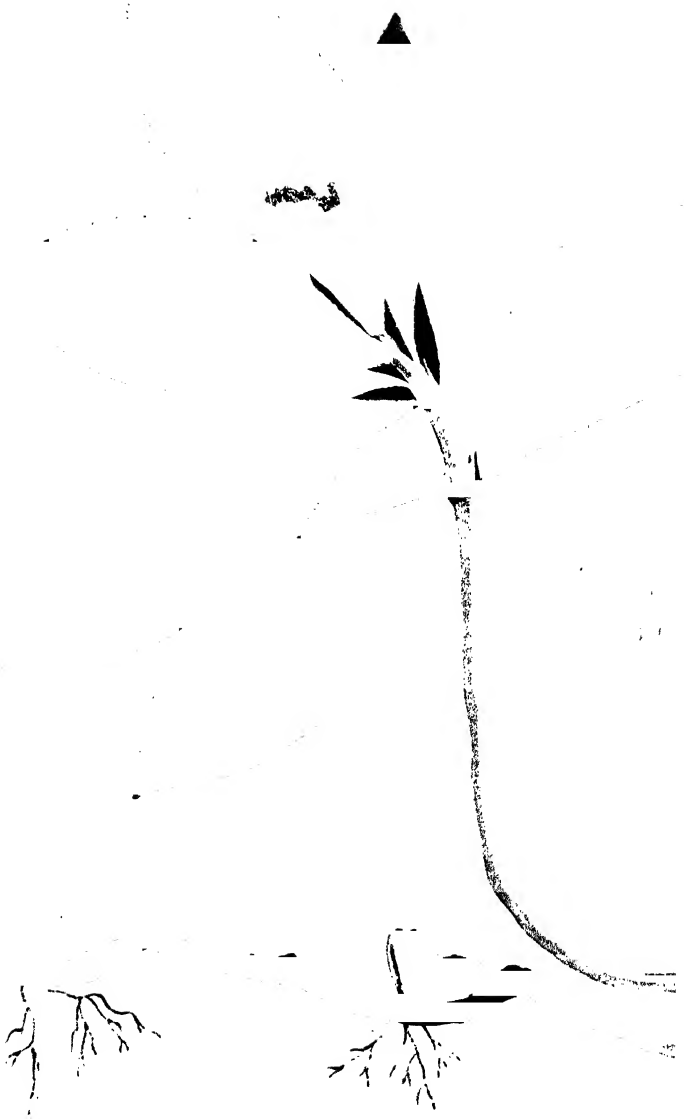
THIS small, delicate species of flax, belongs to the second section of the genus Linum, from having opposite leaves. It is an indigenous annual, growing in dry meadows, and pastures; flowering from the end of May to August. Dr. Milne found it plentifully in waste ground opposite the chalk-pits at Greenhithe; at Gravesend, by the river-side; and in the meadows betwixt Chatham and Gillingham. Dr. Greville, in his "Flora Edinensis," says, it occurs abundantly in the King's Park; and between Burntisland and Pettycur, in Fifeshire.

Mountain-flax rises from a very small, tapering, woody root, with several slender, straight, smooth stems, to the height of a span and upwards. The stem at the lower part is simple, but above pannicled, dichotomous, and spreading. The leaves are small, bright green, elliptical, stand opposite in pairs, and have no foot-stalks; those next the root are rounded, and terminate bluntly; whilst on the stem they are lanceolate, smooth, and pointed. The flowers are small, white, drooping before expan-

sion, and sustained on long pedicles at the extremity of the stalks. The leaves of the calyx are pointed, serrated, and one-ribbed; the petals acute, entire, and spreading; the filaments are ranged in a circle round the lower part of the germen, which is ovate and furnished with capitate stigmas. The capsules resemble those of the preceding species, having the same number of valves and cells, each inclosing a small yellow, smooth, shining, oblong pointed seed. Fig. (*a*) represents the calyx; (*b*) the stamens surrounding the germen; (*c*) the germen, and styles; (*d*) the capsule.

Qualities.—Purging-flax, when well dried, is of a bright green colour, and gives out its virtues to water, which becomes of a greenish brown colour, tastes rather warm, and somewhat bitter. The cathartic property of the plant appears to depend on extractive matter, and a bitter resin.

Medical Properties.—Two ounces of this plant, infused in a pint of water, will form an infusion which is frequently administered to delicate subjects as a valuable indigenous, tonic purgative. A wine-glassful taken twice a-day generally succeeds in keeping the bowels in a soluble condition; but if more decided effects are wanted, it may be given oftener, or combined with neutral salts, or rhubarb. It sometimes produces griping, which is obviated by a little compound spirit of ammonia. Mr. Houlton has prepared an extract, which operates rather severely in doses of ten grains. As the plant grows abundantly in our own country, why has it fallen, so undeservedly, into disuse? Both Gerarde and Lewis strongly recommend it; and the latter states, that it occasionally acts as a diuretic.



Cephaëlis . Ipecacuanha.

LXII

CEPHAËLIS IPECACUANHA.

Ipecacuan.

Class V. PENTANDRIA.—*Order* I. MONOGYNIA.

Nat. Ord. AGGREGATÆ, *Lin.* RUBIACEÆ, *Juss.*

CINCHONACEÆ, *Lind.*

GEN. CHAR. *Flowers* in a congested involucrate capitulum. *Calyx* urceolate 5-toothed. *Corolla* infundibuliform. *Stigma* 2-parted. *Fruit* 2-seeded. *Receptacle* chaffy.

SPEC. CHAR. *Stem* ascending, somewhat shrubby, sarmentaceous. *Leaves* obovate, lanceolate, the younger ones a little pubescent. *Stipules* intrafoliar, many-cleft, setaceous.

Syn.—Herba Paris Brasiliana, Polycoccos, *Raii Hist.* 669.
Ipecacuanha fusca, *Piso Bras. p.* 101; *It. Margr. Bras. p.* 17.
Psychotria Ipecacuanha, *Stokes, Bot. Mat. Med. v.* 1. 364.
Callicocca Ipecacuanha, *Brotero, Lin. Trans. v.* 6. *t.* 2.
Cephaëlis Ipecacuanha, *Willd. Spec. Pl.* 1. 977.
Cephaëlis emetica, *Pers.*

FOREIGN.—*Ipecacuanne*, Fr.; *Ipecacuana*, It.; *Ipecacuanha*, Span.; *Brechwerzel*, Ger.

ALTHOUGH the root of Ipecacuan has been long employed as a valuable article of the materia medica, yet the botanical characters of the plant which produced it remained unknown till Professor Brotero, of Coimbra, determined the genus to which it ought to be referred, with the assistance of observations made in Brazil, on living plants, by Bernardo Gomez, a resident medical botanist. From his description and figure, published in the sixth volume of the Linnean Transactions, which we have copied, it is called Callicocca, but it has since been shown to belong to the genus Cephaëlis. The plant is perennial, a native of moist woods, near Pernambucco, Bahia, Rio Janeiro, and other pro-

vinces of Brazil; flowering from November to March, and ripening its berries in May. It is called Picacuan, or Ipecacuanha, by the natives of some parts of Brazil; *poaia do mato* and *do botico*, by those of the southern provinces; and *cipo*, by others, which is the name often given it by the Portuguese settlers.

The root is simple, or somewhat branched, and furnished with a few short radicles; it is roundish, most frequently perpendicular, but rarely slightly oblique; from two to four inches in length, or more, and two or three lines in thickness: irregularly bent, externally brown, and divided into numerous prominent, unequal, somewhat wrinkled rings. The stem is slightly shrubby, procumbent or creeping at the base, then erect, and rising from five to nine inches in height; it is round, about the thickness of a common quill, smooth, and without leaves; below, brown and knotty, with the scars of fallen leaves, the internodes upwards gradually increasing in length; near the top, it is pubescent, green, leafy, for a year or two simple, then throwing out a few rather crooked, knotty runners, taking roots irregularly at the knots, and producing one or two new stems, about half a foot apart. The leaves are from four to eight, near the summit of the stem; they are almost sessile, opposite, spreading, ovate, pointed at both ends, three or four inches long, one or two broad, and perfectly entire; of a deep green above, besprinkled with roughish points, smooth, or rarely beset with a few scattered hairs; underneath, pale green, and the younger ones somewhat pubescent, with a rather elevated rib, and alternate, nearly parallel lateral veins, curved at the ends. The petioles are short, channelled, and somewhat hairy. At the base of each pair of leaves are a pair of interpetiolar stipules, deeply cut into awl-shaped divisions, sessile, shrivelling, equal to the petioles in length, and with them embracing the stem, being the rudiments of the supplementary leaves, which, when all developed, form whorls in the *Rubiaceæ*. The flowers are aggregated in a solitary head, a little drooping, set on a round downy footstalk, terminating the stem, and encompassed by a four-leaved involucre. The florets are sessile, from fifteen to twenty-

four in number, and separated by chaffy bractes, the length of the florets. The bractes are pubescent, entire, sessile, green, varying in form, sometimes long, and egg-shaped, sometimes rather obtusely lanceolate, and sometimes, but rarely, in size and figure resembling the leaflets of the involucre. The leaflets of the involucre are subcordate, acute, entire, almost sessile, slightly waved, and hairy; the two outer ones largest, and all a little longer than the florets. The calyx is urceolate, and small, superior, membranous, persistent, and with five blunt teeth. The corolla is synpetalous, the border shorter than the tube, woolly about the throat, swelling upwards, and divided into five ovate, acute, spreading segments. The filaments are short, capillary, inserted into the upper part of the tube, and bearing oblong, linear, erect anthers. The germen is ovate, surmounted by a thread-shaped style, the length of the tube, surrounded at the base with a short nectariferous rim, and terminated by two obtuse stigmas the length of the anthers. The fruit is drupaceous, of a reddish purple colour, becoming wrinkled and black, and containing two smooth, oval seeds. Fig. (*a*)

Fig. 1. the interfloral bracteas; 2. the germen and calyx, styles and stigmas somewhat magnified; 3. fruit of the natural size; 4. corolla laid open to show the anthers; 5. corolla, calyx, and germen, a little magnified.

It appears that the first European who brought Ipecacuanha into use, was a native of Brazil, whose name was Michael Tristam. He speaks of it as a remedy for dysentery; the subjoined passage, being a translation from his work, is to be met with in Purchas' Pilgrims, vol. iv. fol. 1311: "*Igpecaya*, or *Pigaya*, is profitable for the bloodie fluxe, the stalke is a quarter long, and the roots of another, or more; it hath onely foure or five leaves; it smelleth much wheresoever it is, but the smell is strong and terrible. This root is beaten, and put in water all night at the deaw, and in the morning, if this water, with the same root beaten and strained, be drunke, (onely the water,) it causeth presently to purge in such sort, that the laske ceaseth altogether." A distinguished writer in Rees' Cyclopædia infers from this passage, that the method of using the plant induced

operations by stool; but if the plant referred to, be the Ipecacuanha now in use, (and the description seems to confirm this,) we do not see how far that construction is warranted; for the nature of the medicine is not altered by water without a decoction be made. As we know that an infusion of Ipecacuanha produces vomiting in our day, we believe that effect is referred to by the Brazilian; and this will readily be conceded, if it be remembered that the word purge was frequently used by our old English authors synonymously with vomit.

Piso afterwards describes it,* and speaks of two sorts, the white and brown, which he says were given for fluxes, and as vomits. But we are indebted to Helvetius for bringing it into general use, under the patronage of Louis XIV. from whom he received a thousand pounds, to reveal the secret medicine with which he so successfully treated dysentery. Besides the brown Ipecacuanha, there is another sort, brought from Brazil, which varies in appearance from the former; and some have supposed that these differences are owing to accidental circumstances, such as the place of growth, the kind of soil, &c.; but on the authority of M. Gomez, the common *brown* Ipecacuanha of the shops is yielded by the Cephaëlis *Ipecacuanha*, while the *white* is the root of the Richardsonia *Brasiliensis*, which is exported largely to Portugal. Besides these, the name of *Ipecacuan*, which is a compound of *ipi*, the Peruvian word for root, and *Cacuanha*, the name of the district where this root was first procured, has come by a common license of language to mean *vomiting root*, and is given to various species of Cynanchum, Asclepias, Euphorbia, Dorstenia, &c., and with regard to their comparative power, De Candolle says, that vomiting is produced by twenty-two grains of the Cynanchum *I*; by twenty-four of the Psychotria *emetica*; and by from sixty to seventy-two of the Viola *calceolaria*.

Linneus, in a paper published in the third volume of "Amœnitates Academicæ," gave Ipecacuanha as a trivial name to a species of Euphorbia, a native of Virginia and Carolina; the

* Historia Naturalis Brasiliæ, p. 101. It has been asserted that Piso was the first to advert to ipecacuanha, but his work was published several years after Tristam's.

root of which is there used as an emetic. But this was soon discovered not to be the real Ipecacuanha. In his second "Mantissa," he gave the trivial name to a species of *Viola*, a native of Brazil; the root of which he supposed to be the white Ipecacuanha of the shops. De Candolle, in a paper published in the "Bulletin des Sciences par la Societé Philomathique," and republished entire in the "Nouveau Dictionaire d'Histoire Naturelle," says, there are three species of Viola which produce the white Ipecacuanha; the *calceolaria* of the "Species Plantarum," a native of Guiana, and the Antilles; the *ipecacuanha* of the Mantissa, and the *parviflora* of the "Supplementum Plantarum," both natives of Brazil. The roots of these, and especially the last, are sometimes mingled in common with the true or brown Ipecacuanha; but they are fraudulent adulterations, and do not possess its active properties. They may be distinguished by their colour, but most certainly by the size of the woody part, which in these is always considerably thicker than the bark; whereas, in the true Ipecacuanha it is much less; and, as described by Brotero, is only a fibre *(filum.)*

The *black* or *striated Ipecacuanha*, *(Psychotria emetica,)* is exported from Carthagena to Cadiz. It is black within and without, fusiform, articulated, striated, and not annulated. The *white*, in contradiction to De Candolle, is described by Gomez, to be the root of Richardsonia *Brasiliensis:* "it is of a dirty white, and turns brown by drying; it is simple, or little branched, often five or six lines thick, three inches long and upwards, attenuated at its extremities, variously contorted, with transverse annular rugosities larger than those of the brown ipecacuanha; bark thick, and white internally; softer than the other; wood white, hard, fine as a thread; when fresh, its taste is acrid; when dry, farinaceous; smell, nauseous when recent."

The common brown (Cephaëlis *Ipecacuanha)* is exported from Rio to Portugal. Its colour varies from different degrees of grey to brown and red; but it is characterized by being contorted, wrinkled, and unequal in thickness; having a thick, brittle bark, deeply fissured transversely, covering a central very

small white wood, so as to give the idea of a number of rings strung upon a thread.

Descriptions of three varieties are given by Dr. Thompson, and he is confirmed in his account by the authors of the *Dictionaire de Materia Medicale.* The whole subject is, however, still involved in considerable difficulty from the cause we have already adverted to, viz. the signification of the term *Ipecacuan,* being applied so generally to plants that excite vomiting. We are quite sure, however, that the plant we have figured, yields the brown Ipecacuanha which is so generally employed; dried specimens being in existence in this country. And by reference to Dr. Woodville's plate, which was copied from a specimen sent home in spirits to Sir Joseph Banks, without its flower, it will be seen that the plants agree.

Qualities and Chemical Properties.—The roots of ipecacuan consist of two parts, an internal ligneous axis resembling a thread, upon which the annulated bark seems strung like beads. The first is inert, the second contains the active principles: hence, for medical use these should be separated, the cortical portion alone being worthy of preservation. Pelletier found on analysis that 100 parts of the bark yielded 16 parts emetine, while the woody axis afforded only 1.15, so that the difference of the action is satisfactorily accounted for. Powdered Ipecacuan has a sickly odour, and a bitterish acrid taste; and on those who pulverize it, sometimes excites such powerful effects, as to produce nausea, faintings, and spitting of blood. It has been subjected to various chemical investigations, and Dr. Irvine ascertained that it contains a gum resin. MM. Pelletier and Majendie have given the following as the result of their analysis:—

Oil	2
Emetine	16
Wax	6
Gum	10
Starch	42
Wood	20
Loss	4
	100

Annales de Chimie, iv. 180.

While pursuing their investigations, the above-named experimenters discovered that the power of the various species of Ipecacuanha depended on a peculiar principle, to which the name *emetine* has been given; and they think, that it might upon all occasions be substituted with advantage, being much more active than Ipecacuanha itself, without possessing its disagreeable taste and smell. The latter quality resides in a greasy substance, quite distinct from that on which depends its emetic virtue; for M. Caventou swallowed it with impunity to the extent of six grains. As we have already announced, Art. Viola *adorata*, emetine has also been discovered in that plant by M. Boulay. The mode of preparing emetine, and its employment, are fully detailed under *medical properties*.

Incompatibles.—All vegetable astringents, as infusion of galls and vegetable acids, weaken or destroy the power of Ipecacuanha; and Dr. Irvine found that half a drachm administered in two ounces of vinegar produced loose stools only.

Medical Properties and Uses.—The utility of Ipecacuanha is generally known and very properly appreciated. As an emetic, it operates in doses of from five to thirty grains, surely and efficiently; without depressing the system at large, like many other emetics, or injuring the mucous membrane of the stomach; it is, therefore, to be preferred as a mere evacuant of this organ; and if we wish to induce its speedy operation without exciting much nausea, we can give it in the fullest doses with perfect safety. Its power as an emetic has been rather undervalued in one particular view; for, if *opium* be taken, recourse is generally had to violent remedies, which by simple contact with the stomach, when in a torpid condition, cannot fail to produce injurious results. We remember to have heard Dr. Currie narrate a case of this kind, when the sulphates of zinc, and of copper, failed to produce their accustomed effects; he therefore poured some boiling water on a quantity of powdered Ipecacuanha, and as soon as it was cool enough, caused large doses to be swallowed, which were the speedy means of causing vomiting, and of saving the life of the patient. Since then, we have borne this in mind; and in two

or three similar cases, have found the *unstrained infusion* quite equal to its task.

Ipecacuanha is sometimes employed in a full dose on the accession of the paroxysm of intermittent fever; and by destroying the link which held the chain of diseased sympathies together, it has often succeeded in cutting short the disease. Paroxysms of spasmodic asthma, also, often yield to the same treatment; and in the more chronic form of that disease, small doses, advantageously produce both expectoration and perspiration. In chronic dysentery and diarrhœa, it is a most useful medicine, in small doses; and we think, that its power over these diseases may be attributed to the following circumstances: in the first place, it has a tendency to excite *diaphoresis*, by which the circulation is equalized, and a great determination of blood to the diseased parts is taken off; secondly, it sometimes, even in *very* small doses, excites nausea, and gentle vomiting, which not only check arterial action in a powerful manner, but by this very inversion of the peristaltic motion of the intestines, destroy the harmony of disordered actions: and thirdly, when vomiting is not produced, it appears to promote secretion in the lining membrane of the bowels, whereby a healthy condition is eventually re-established. Given in doses of half a grain even, it produces the last-mentioned effect on the stomach; and is, therefore, frequently prescribed in cases of dyspepsia, attended by a foul tongue. Small nauseating doses are advantageously given to subdue uterine and pulmonary hæmorrhages; and, when combined with opium, the effects of both appear to be modified, so that under the name of Dover's powder, they form one of the most powerful and useful sudorifics that can be employed for acute, or chronic rheumatism, and for eruptive diseases that are disposed to recede. Nauseating doses of Ipecacuanha are also useful for hooping cough, epilepsy, and amaurosis.

Pison ascribes purgative and astringent properties, as well as emetic ones, to the root of Ipecacuan. The two former are, however, very subordinate powers; and its influence in restraining inordinate fluxes may rather be attributed to the antiperi-

staltic motions which its emetic energies excite, than to any absolute astringency that it possesses: heat diminishes, and if long kept up, destroys the emetic power of Ipecacuan; a decoction is therefore sometimes administered as a mild aperient, after the subsidence or cure of diarrhœa and dysentery. Ipecacuanha has been occasionally found to cause retention of urine.

Preparation of Coloured Emetine.

Reduce Ipecacuanha to powder, and digest it in ether at 60° to dissolve the fatty odorous matter, When the powder yields nothing more to the ether, exhaust it again by means of alcohol. Place the alcoholic tinctures in a water-bath, and re-dissolve the residue in cold water. It thus loses a portion of wax, and a little of the fatty matter, which still remained. It is only necessary farther to macerate it on carbonate of magnesia, by which it loses its gallic acid; to re-dissolve it in alcohol, and to evaporate it to dryness.

But pure emetine is not obtainable in this way, although it may serve for medical purposes. (See the next page.) It presents itself in the form of transparent scales, of a reddish brown colour, having scarcely any smell, but a bitter though not disagreeable taste. It supports a temperature equal to that of boiling water, without any change: it is highly deliquescent, soluble in water, and uncrystallizable.

Action of Emetine on the Animal System.

Experiments have shown that this substance, given to dogs and cats, to the extent of from half a grain to two or three grains, produced vomiting, followed sometimes by long protracted sleep: but when given to a greater extent, such as ten grains, it produced upon dogs repeated vomiting, accompanied by stupor, in which the animal, instead of recovering, as in the other case, commonly died in the course of twenty-four hours. On opening the body, the cause of death was discovered to be a violent inflammation of the pulmonary tissue, and of the mucous membrane of the intestinal canal, from the cardia to the anus—phenomena very analogous to those described by Majendie, in a separate memoir on the action of tartar emetic. The same effects are produced whether the emetine be injected into the jugular vein, or simply absorbed from any part of the body.

Two grains taken on an empty stomach, gave rise to protracted vomiting, followed by a marked disposition to sleep. Sometimes a quarter of a grain will be sufficient to excite nausea and vomiting. In cases of disease, the action of this substance is perfectly analogous. 'It both vomits and purges, but acts beneficially in catarrhal affections, particularly those of a chronic kind.*

* See Recherches Chimiques et Physiologiques sur l'Ipecac. Par MM. Majendie et Pelletier. Paris, 1807.

Medicinal Employment.

The cases in which emetine may be given, are the same as those in which Ipecacuanha is indicated.

To procure vomiting, dissolve four grains, and give it in divided doses. If the whole quantity were administered together, the vomiting thereby excited would expel it at once from the stomach, without producing any other effect. The following formula may be used.

Emetine Mixture.

Take of	Emetine . . .	. 4 grains.
	Weak orange-flower infusion .	. 2 ounces.
	Syrup of orange-flower . .	. ½ ounce.

Mix.

Five *gros* to be taken every half-hour.

It is contained in, and may be procured from several different plants, as before stated; but it exists in them in very different proportions. Sixteen ounces of good brown Ipecacuanha yields 24 grains of emetine, or about 16 per cent. from the cortical portion; from the Psychotria, from 9 to 14 per cent. has been procured; but the Richardsonia Braziliensis does not afford more than 5 or 6 per cent., a proportion too small to allow of its being profitably extracted, or to render the root valuable as an emetic.

In chronic pulmonary catarrhs, hooping-cough, obstinate diarrhœas, &c. the following lozenges may be advantageously substituted for the common ipecacuanha preparations of that sort.

Pectoral Lozenges of Emetine.

Take of	Sugar . . .	. 4 ounces.
	Coloured Emetine . .	. 32 grains.

Mix.

To be made into lozenges of nine grains each. It is customary to give these lozenges a rose colour, by means of a little carmine, in order to distinguish them from similar preparations of Ipecacuanha. One may be given every hour; but more frequent exhibition will excite nausea. To excite vomiting by means of similar lozenges, half the quantity of sugar only should be used, and the proportion of emetine being the same, the lozenges should consist of 18 grains. One of these, taken fasting, is commonly an emetic for a child, and three or four will readily excite vomiting in adults.

The following syrup may be substituted for the syrup of Ipecacuanha used in France.

Take of	Simple Syrup . .	. 1 pound.
	Coloured Emetine . .	. 16 grains.

Make a syrup.

PURE EMETINE.

The emetine of which we have hitherto spoken, is by no means pure. M. Pelletier, during an extended course of chemical researches, has obtained the active matter of the Ipecacuanha in a completely isolated state; and it appears to be a new vegetable alkali—of which we proceed to describe the principal characters.

Mode of Preparation.

To obtain pure emetine, calcined magnesia must be employed, adding a quantity of this base sufficient to take up the free acid which exists in the liquor, and also to attract that which is combined with the emetine. This substance, being thus separated and rendered less soluble, is precipitated and mixed with the excess of magnesia; and the precipitate, washed with a little cold water, (which takes up the colouring matter not combined with the magnesia,) must be carefully dried, and treated with alcohol, which dissolves the emetine. This being again obtained, (after evaporating the alcohol,) must be re-dissolved in diluted acid, and treated with purified animal charcoal. After this process, for the purpose of removing the colour, we are to precipitate by means of a salifiable base. The waters in which the magnesian precipitate has been washed, still retain a portion of emetine, which may be obtained by another series of operations.

M. Calloud obtains emetine by the following process:—125 *grammes* of the cortical part of Ipecacuanha pulverized, is mixed with 800 *grammes* of water, acidulated by 16 grains of sulphuric acid: it is brought to the boiling point, and kept a little below that temperature for half an hour, stirring it constantly with a wooden spatula; then it is all poured into a shallow earthen dish, so as to extend the surface as much as possible.

This acidulated decoction is left to cool, and to it is added 125 *grammes* of pulverized lime; it is then reduced to the consistence of jelly by the addition of a sufficient quantity of water, and afterwards dried upon a stove at a temperature not above 50° Reaumur.

This mass is then pulverized; it is composed of sulphate of lime, gallate of lime, fatty and colouring matter combined with an excess of lime, free emetine, fecula and woody matter. On submitting this to the action of boiling alcohol at 36°, or 38°, the emetine is dissolved, combined with very little common matter; and is obtained by evaporating the alcohol.

To procure this substance in a pure and white state, dissolve it in water slightly acidulated, treat it by very pure animal charcoal, filter the solution, that it may be more conveniently concentrated; saturate the acid with weak ammonia, filter, wash with a little distilled water, and leave what remains upon the filter to dry at the ordinary temperature, and in the dark: this will be pure emetine.

Emetine may be procured from the mother waters and washings, according to the methods already described.

Physical and Chemical Properties.

Pure emetine is white and pulverulent, not acted on by the air; whereas coloured emetine is deliquescent. This substance is slightly soluble in cold water, rather more so in warm water, but readily so in ether and alcohol. Its taste is mildly bitter. It is very fusible, melting at 50° of the centigrade. It restores the blue colour to turnsol reddened by an acid; and dissolves in all the acids, lessening, without entirely removing, their acidity; and forming with them crystallizable salts, in which the acid predominates. It is precipitated from its combinations by gall nuts, in the manner of the alkalies of cinchona, so that in a case of poisoning by emetine, gall nuts would be the best antidote. M. Caventou swal-

lowed a dose which produced inconvenient consequences, but neutralized its action by a decoction of galls. According to MM. Dumas and Pelletier, the composition of this substance is :—

Carbon	64,57
Azote	4,00
Hydrogen	7,77
Oxygen	22,95
Emetine	99,29

This emetine was obtained from the Cephaëlis emetica.

Action of the Pure Emetine on the Animal System.

It is the same as that of the coloured, but much more powerful. Two grains are sufficient to kill a large dog. M. Majendie saw vomiting produced by one sixteenth of a grain in a man aged 85, in whom, however, vomiting was easily excited.

Medicinal Employment.

For some time M. Majendie has used lozenges, composed of

Sugar	4 ounces,
Pure emetine	8 grains,

made into lozenges of 9 grains each.

But in order to produce vomiting, one grain of pure emetine, previously dissolved either in a little acetic or sulphuric acid, may be mixed in some drink; or the following formula may be adopted:

Emetic Mixture of Pure Emetine.

Take of Infusion of lime flowers	3 ounces
Pure emetine dissolved in a sufficient quantity of acetic acid	1 grain.
Syrup of marshmallow	1 ounce.

Mix.

Dose. Five *gros* every quarter of an hour till vomiting is produced.

Or, a syrup may be prepared in the following manner.

Take of Simple syrup	1 pound.
Pure emetine	4 grains.

Make a syrup which may be given in doses of 5 grammes.

OFF. PREP.—Pulvis Ipecacuanhæ Compositus. *L. D.*
Vinum Ipecacuanhæ. *L. E. D.*

OXALIS ACETOSELLA.

Common Wood-sorrel.

Class X. DECANDRIA. *Order* V. PENTAGYNIA.

Nat. Ord. GRUINALES, *Lin.* GERANIA, *Juss.* OXALIDEÆ, *De Cand.* OXALIDACEÆ, *Burn.*

GEN. CHAR. *Sepals* 5. *Petals* connected at the base. *Capsule* 5-celled, angular. *Seeds* with an elastic arillus.

* * * *Leaves ternate, scape* 1-*flowered.*

SPEC. CHAR. *Leaves* all radical, ternate, inversely heart-shaped, hairy. *Scape* single-flowered. *Rhizoma* squamose.

Syn.—Oxalis alba, *Raii Syn*, 281; *Ger. Em.* 1201. *f.*; *Merr. Pin.* 90.
Trifolium acetosum, *Camer. Epit.* 584. *f.* 2; *Matth. Valgr. v.* 1. 191. *f.*
Oxys. *n.* 928. *Hall. Hist. v.* 1. 402.
Oxalis Acetosella, *Lin. Sp. Pl.* 602; *Willd. v.* 2. 780; *Fl. Brit.* 491; *Eng. Bot. v.* 11. *t.* 762; *Curt. Lond. fasc.* 2. *t.* 31; *Woodv. t.* 20; *Hook. Scot.* 141: *Fl. Dan. t.* 980; *Stokes, v.* 2. 555.

PROVINCIALLY.—*Woodsour*; *Sour trefoil*; *Stubwort*; *Alleluja*; *Cuckoo's beard*; *Shamrock.*

FOREIGN.—*Petite Oseille, Surelle,* or *Pain a Coucu,* Fr.; *Acetosa salvatca,* It.; *Oxalide arederilla,* Sp.; *Sauerklee,* Ger.; *Klaverzuuring,* Dutch; *Koganne gusa,* Jap.; *Saitschaitschawel,* Russ.

THIS delicate creeping plant is very generally found throughout Europe. It is a perennial, growing in moist shady woods, and producing its flowers in April and May.

The rhizoma is horizontal, and consists of several fleshy reddish scales, connected by a thread. The leaves are ternate, on long, hairy, radical, purplish footstalks; with the leaflets obcordate and entire, drooping in the evening, of a yellowish-green colour, and purplish underneath. The scape, or flower-stalk, is about four inches high, slender, furnished with a pair of opposite bracteas, placed considerably below the flower, which is bell-shaped, drooping, of a delicate white or pale flesh-colour, and

streaked with purplish veins. The calyx is cut into five, acute, ovate segments; petals five, obovate, spreading; filaments capillary, with oblong, furrowed, incumbent anthers; germen ovate, with five thread-shaped styles, and obtuse, downy stigmas. The capsule is 5-celled, membranous, and containing two seeds in each cell, and inclosed within an elastic arillus, by the bursting of which they are thrown out. Fig. (*a*) shows the petals spread; (*b*) the styles; (*c*) the stamens.

This plant is called by old Gerarde, wood sour, sour trefoil, stub-wort, and sorrel du bois; by herbalists, alleluya, and cuckoo's meat, "by reason when it springeth forth and flowereth, the cuckoo singeth most; at which time also alleluya was wont to be sung in churches." The names, Alleluya and Lujula, appear, however, to be corrupted from the Calabrian, *Juliola*.

Qualities and Chemical Properties.—Wood-sorrel is inodorous, but possesses a very agreeable and refreshing acid taste. Twenty pounds of the fresh plant yielded to Neuman six pounds of juice, from which he got two ounces, two drams, and one scruple of the bin-oxalate of potash: and two ounces, six drams of an impure saline mass.

The bin-oxalate of potash is one of three subspecies of oxalate of potash, and exists ready formed in Oxalis *Acetosella*, Oxalis *corniculata*, and different species of Rumex, from which it is extracted in some parts of Europe in large quantities. Hence it is known by the name of salt of wood-sorrel, and in this country is sold as essential salt of lemons, mixed with an equal quantity of cream of tartar. It is mentioned by Duclos in the Memoirs of the French Academy for 1668. Maregraaf proved that it contained potass; and Scheele discovered its acid to be the oxalic. It may be formed, as Scheele has shown, by dropping potash very gradually into a saturated solution of oxalic acid in water: as soon as the proper quantity of alkali is added, the bin-oxalate is precipitated. But care must be taken not to add too much alkali, otherwise no precipitation will take place at all.

Medical Properties and Uses.—The leaves of this plant are among the most grateful of the vegetable acids. The juice of sorrel is sometimes used as an agreeable refreshing drink in fevers, and the leaves boiled in milk form a pleasant whey: but the other vegetable acids are quite as useful and more available: Beaten up with fine sugar, the leaves make a refreshing and wholesome conserve; "its flavour resembling green tea." The leaves in a recent state form a good salad for the scorbutic, and have been employed with advantage as an external application to scrofulous ulcers.

Bryonia dioica

BRYONIA DIOICA.

Red-berried Bryony.

Class XXI. MONŒCIA.—*Order* V. PENTANDRIA.

Nat. Ord. CUCURBITACEÆ, *Lin. Juss. De Cand.*, &c.

GEN. CHAR. Barren flower. *Calyx* 5-toothed. *Corolla* 5-cleft. *Filaments* 3. Anthers 5. Fertile flower. *Calyx* 5-toothed. *Corolla* 5-cleft. *Style* trifid. *Fruit* inferior, globose, many-seeded.

SPEC. CHAR. *Leaves* palmated, 5-lobed, toothed, rough on both sides. *Flowers* racemose, dioicous.

Syn.—Bryonia alba, *Raii Syn.* 261; *Ger. Em.* 869; *Woodv. v.* 3. *t.* 189.
Bryonia aspera, sive alba, baccis rubris, *Bauh. Pin.* 297; *Mill. Ic.* 47. *t.* 71.
Vitis alba, sive Bryonia, *Matth. Valgr. v.* 2. 620. *f.*; *Camer. Epit.* 987. *f.*; *Fuchs. Hist.* 24. *f.*
Bryonia dioica. *Willd. Sp. Pl. v.* 4. *t.* 621; *Fl. Brit.* 1019; *Eng. Bot. v.* 7. *t.* 489; *Hook. Scot.* 272.

PROVINCIALLY.—*Bryony; Tetter Berry; White Wild Vine; Wild Hops.*

FOREIGN.—*Bryone, Couleavre*, Fr.; *Brionia, vite bianca*, It.; *Nenza alba*, Sp.; *Norca branca*, Port.; *Zaunrube, Stickwurz*, Ger.; *Wilde Wyngaard, Witte Bryone*, Dutch; *Hundrosva*, Swed.: *Przestep bialy*, Pol.

THIS is an indigenous plant, with annual stems, and a perennial root; very common in dry hedges, and flowering from May to September.

From a large, fleshy root, which is often as thick as a man's thigh, of a white colour, and subdivided below, this species of bryony rises with several slender, herbaceous, annual, rough, leafy stems, somewhat branched, and climbing by means of tendrils to the height of several feet. The leaves are large, with five acute lobes, hairy on both sides, rough all over with minute callous tubercles, and disposed alternately on strong hairy footstalks.

The flowers are dioicous, or male and female on different plants; of yellowish white colour, elegantly streaked with green veins, and spring in paniculiform racemes from the axillæ of the leaves. Miller observed that, after the first two or three years, old roots sometimes produced both fertile and barren blossoms on the same plant, "as is proper to all the other known species of this genus." The calyx of the stamineous flower is catasepalous, bell-shaped, and deeply divided into five narrow, pointed, segments; the corolla is also bell-shaped, and divided into five deep segments which are ovate and spreading. The filaments are three; short, thick, and furnished with five anthers, of which four are in pairs, united on two of the filaments, and the fifth solitary on the third filament. The calyx and corolla of the pistilline flowers are superior, and resemble those of the stamineous ones, but are smaller. The germen is inferior, surmounted by a short, strong, erect, 3-cleft style, with large, cloven, triangular, spreading stigmas. The fruit is a smooth, globular, red berry, about the size of a common garden-pea, containing five or six roundish seeds, in pairs, attached to the rind. "The true Bryonia *alba* of Linneus, found on the continent, has black fruit, being called *alba* from its white root, in contradistinction to *Tamus*, the black-rooted Bryony."*—Fig. (*a*) represents the corolla spread open to show the anthers; (*b*) the germen, with its styles and stigmas; (*c*) the ripe fruit.

Qualities and Chemical Properties.—The fresh root, which is spongy, has an extremely disagreeable odour, and a particularly nauseous taste, both which appear to depend principally upon an acrid principle that can be so dissipated by repeated washings with water, as to leave a fecula similar to that yielded by the potatoe; and which, in the scarcity which followed the French revolution, was resorted to as food, and found to be very nutritious. Vauquelin has lately analyzed the root. By maceration in water, and subsequent pressure in a linen cloth, the starch was separated, and obtained in a state of purity. The bitter substance was soluble both in alcohol and water, and appeared to possess the properties of pure bitter principle. It was

* Smith's English Flora, v. 4. p. 130.

found also to contain a considerable portion of gum; a substance which is precipitated by infusion of galls, and which Vauquelin denominates vegeto-animal matter, some woody fibres, a small portion of sugar, and a quantity of super-malate of lime, and phosphate of lime.

Poisonous Effects.—Given in over-doses, the root of Bryony exerts a powerful influence on the lining membrane of the stomach and bowels; producing all the effects of an acrid cathartic, such as vomiting, purging, intense pain, and inflammation and all its consequences. Orfila infers from numerous experiments—

1st. That the bryony root acts upon men in the same manner as upon dogs.

2nd. That its effects may depend on the inflammation it produces, and the sympathetic irritation of the nervous system, rather than on its absorption.

3rd. That its deleterious properties reside especially in the portion which is soluble in water.

Treatment.—First evacuate the stomach by ipecacuanha powder, suspended in warm water. After the stomach has been evacuated, give repeated doses of the sulphate of magnesia, dissolved in almond emulsion, which will not only operate on the bowels, but serve to defend the mucous membrane of the intestinal canal from the acrid effects of the poison. Should inflammatory symptoms supervene, the usual antiphlogistic treatment is to be practised.

Medical Properties and Uses.—This root was formerly much extolled as a cathartic and diuretic. Its medical properties evidently depend upon its acrid juice, which is most powerful in the autumn and spring; the root must therefore be procured at one of these periods, and to insure its uniform operation, the latter period should alway be chosen. The root should be cut n thin slices and dried in the sun, or in a warm room; by which means some of the acrid qualities are dissipated: and then it is a remedy of no little value in dropsical cases, as we can testify from extensive experience. The infusion is the best mode of administration, and this may be made with half an ounce of the

dried root in a pint of boiling water; to which may be added one ounce of spirit of Juniper. Of this mixture a wine-glassful should be taken every four hours; whereby numerous watery evacuations, and a copious secretion of urine, will be obtained. Like all other irritating purgatives, it occasionally acts too powerfully; when its use must be suspended, and cordials or opiates resorted to. It has been much commended for its effects in mania, and amongst others by Sydenham. Dioscorides and Pliny, were in the habit of giving an ounce of the juice for epilepsy: some of the moderns have done the same; and to procure it, it is customary to cut off the top, and scoop a hole in the root; which in the course of a few hours will be filled. Matthiolus recommends it for hysteria. Many accounts partaking of the marvellous, are extant of its virtues in expelling worms and some imaginary parasites of the abdomen; * and it was once much celebrated as an emmenagogue.† Withering says, that a decoction made with a pound of the fresh root, is the best purge for horned cattle; and it is a common practice in Norfolk, to give small quantities to horses in their corn, to render their coats glossy and fine. The recent root is capable of blistering the skin, and has been found useful, if externally applied, to rheumatic affections,‡ and also for removing extravasated blood. "In hospitals," says Dr. R. Pearson, "it would very well supply the place of jalap, and thus lead to considerable savings."

The *dose* of the powder is from half, to one dram.

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* Vide Tabias, qui magna bryoniæ tribuit: quin etiam conducit singulariter, ad lumbricos, et variarum formarum vermes, lacertas, bufones, aliáque animalcula subinde in hominum intestinis reperibilia enecanda et expellenda. Hoc non tantummodò duobus egregiis experimentis confirmat Freitagus, sed etiam D. Michaëlis ex ancilla Altenburgica bufones et ranas deturbavit bryonia et iride nostrate.

Etmuller *Opera Omnia*, Vol. I. p. 608.

† Menses ac fœtum pellit, abortumque sæpe procurat.—*Ibid.*

‡ Vel radix recens contusa cum oleo lini subacta, et tepidè applicata, dolores ischiadicos sliosque; arthriticos tollit .... et in omni sanguine grumoso dissolvendo, et contusionibus; sicut et folia contusa in livore applicata sanguinem grumosum discutiunt.—*Ibid.*